2016

# Development and Pretesting of a Weight Management Behavior Questionnaire for Overweight and Obese African American Females

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Development and Pretesting of a Weight Management Behavior Questionnaire for Overweight and Obese African American Females

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A dissertation submitted to the faculty of the Medical University of South Carolina in fulfillment of the requirements of the degree of Doctor of Philosophy in the College of Nursing

August, 2016

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**Acknowledgments**

The way to my doctoral degree has not been smooth. I doubt anyone's is; the process itself is an education. My particular detours have included minor life changes, personal illness, and my father's death. At times I doubted. Yet, I was supported by wonderful people and want to acknowledge their contributions.

I would like to remember my dad, Dewey Myers, Jr., who passed away in February of 2016. He fostered a lifelong thirst for knowledge and an attitude of perseverance, each of which helped me stick with the program whenever I felt overwhelmed. As I sat with him during his final illness, he told me how proud he was and made me promise to "do what I needed and not worry about" him. His support was unfailing. I will miss him dearly.

I also thank my husband, Bret, and daughter, Becca, my closest fellow voyagers, sometimes pushing from behind, often pulling from the front, but mostly traveling by my side. Their understanding, acceptance, and assistance made me feel at home, even when I was not physically there. Similarly, I am grateful for the rest of my family's belief in me.

My dissertation committee members, Drs. Magwood, Nemeth, Jenkins, Mueller and Fitzsimmons, have offered knowledge, support, and inspiration. They have invested significant time working with me to ensure my success. I am grateful to all the staff and faculty at the College of Nursing who have also contributed to my education and success. I would also like to thank the women who gave of themselves, as well as their valuable time and effort.

Finally and first, I give thanks to God, Jesus Christ, and the Holy Spirit, who provided me gifts with which to start the journey, never left me in those moments I doubted, and peopled the journey with those I thank above and those I've unconsciously forgotten.

**Abstract**

Suzanne Myers Sutton. Development and Pretesting of a Weight Management Behavior Questionnaire for Overweight and Obese African American Females

Overweight and obesity disproportionately effect the health and well-being of African American women in the United States. Existing vulnerabilities and health disparities compound risks associated with overweight and obesity, leading to increased incidence of disability, morbidity and early mortality. Further, current weight management interventions (WMIs) do not address the needs of overweight and obese (OWO) African American females (AAF), with limited research focusing on the biopsychosocial variables that influence weight-related behaviors in this population. This dissertation describes the development and pretesting of a theoretically-based questionnaire that may be used to assess the biopsychosocial needs of OWO AAF and guide development of (WMIs). The first manuscript of this dissertation compendium describes a conceptual model of weight management in OWO AAF developed through the process of dimensional analysis as described by Schatzman. A scoping review of behavioral WMIsfor OWO AAF follows the first manuscript, describing the current literature and identifying gaps in the research. Finally, the third manuscript describes the development and pretesting of a weight-management behaviors questionnaire that may be used to assess the needs of OWO AAF and guide the development and evaluation of weight management interventions.

KEYWORDS: Overweight and obesity; African American females; weight management; behavior change; questionnaire development

TABLE OF CONTENTS

LIST OF FIGURES

**Manuscript 1**



**Manuscript 2**



**Manuscript 3**

LIST OF TABLES

## Introduction

In the United States (US), African American females (AAF) are disproportionately affected by overweight and obesity and the accompanying health, psychosocial, and financial consequences (Hamby, 2013; National Center for Health Statistics [NCHS], 2016 Zhang & Rodriguez-Monguio, 2012). While the overall prevalence in the US has been relatively stable at approximately 69%, the prevalence of overweight and obesity in AAF continues to rise significantly (Flegal, Carrol, Kit, & Ogden, 2012). However, African American females (AAF) suffer a higher prevalence of overweight and obesity than any other gender or ethnic group in the country and their numbers are increasing significantly. In addition, AAF more likely to be obese (BMI $\geq$ 30 kg/m$^2$) than overweight (BMI 25 – 29.9 kg/m$^2$) and are twice as likely to suffer from extreme obesity (BMI $\geq$ 40 kg/m$^2$) than white women, with 31.9% of AAF having a BMI $\geq$ 35 kg/m$^{2,}$ compared to 17.6% of white women (NCHS, 2016).

Overweight and obesity are risk factors for many chronic diseases, including cardiovascular and cerebrovascular disease, hypertension, type 2 diabetes, kidney disease, and many types of cancers (Hamby, 2013; Eheman et al., 2012). AAF tend to suffer increased morbity and mortality associated with overweight and obesity (Zhang & Rodriguez-Monguio, 2012) and 25% of all-cause mortality in AAF is associated with overweight and obesity (Masters et al., 2013). Overweight and obesity is also associated with decreased quality of life, depression, disability, social stigma, increased health disparities and costs (Azarbad & Gonder-Frederick, 2010; Dor, Ferguson, Langwith, & Tan, 2010; Knight, 2011).

Existing research on weight management fails to address the needs of OWO AAF, as the majority of research participants are white females and little attention has been given to development of culturally appropriate interventions. Consequently, AAF who do participate in such studies often do not experience comparable successes of their white counterparts, resulting in less weight loss, poor adherence and inability to maintain behavioral change (Fitzgibbon et al., 2012; Kong et al., 2014). There are few research studies in which the sample population is more than 50% AAF, and such research lacks consistency and detailed descriptions of methods and measures (Fitzgibbon et al., 2012; Kong et al.,

2014; Kumanyika et al., 2014), including failure to describe a theoretical framework, identify population needs, or clearly explain intervention strategies (Sutton, Magwood, Jenkins, & Nemeth, 2016).

This dissertation sought to understand and address the needs of OWO AAF by development of a conceptual model of weight management in OWO AAF, identification of gaps in the literature, and development of a theoretically-grounded questionnaire to assess the attitudes and beliefs of OWO AAF towards weight management behaviors. Dimensional analysis was used to examine the phenomenon of weight management in OWO AAF, providing the PI with a deeper understanding of the complex and fluid nature of the phenomenon. Following the dimensional analysis, a scoping review of the literature revealed a paucity of behavioral weight management research including OWO AAF participants and a failure to meet their needs related to weight management. A third, three-phase study was completed to develop a theoretically-based questionnaire to assess the needs of OWO AAF and may be useful in development and evaluation of behavioral WMIs.

The dimensional analysis used to develop the conceptual model of weight management in OWO AAF identified constructs consistent with many behavioral change theories, such as knowledge, perceived vulnerability, motivation, self-efficacy, normative beliefs and outcome beliefs. Through investigation of behavioral change theories, along with ongoing topical research, it was discovered that use of a careful blending of theories may best frame weight management research in OWO AAF (Bartholomew, Markham, Mullen, & Fernandez, 2015). The Integrated Behavioral Model (IBM) explains a person's behavior as an interaction between attitudes towards a behavior, normative beliefs, and control beliefs, resulting in intention to perform the behavior. Behavioral intention is determined by intrinsic and extrinsic factors that positively or negatively influence a person's desire to engage in a defined behavior and is considered the most important factor in determining actual engagement in a behavior (Fishbein & Ajzen, 2010; Glanz, Rimer, & Viswanath, 2015). Although the most important factor determining behavior may be intent, not all individuals with intent engage in the behavior. Post-intention variables may discourage or prevent individuals from following through with their intention, resulting in an intention-behavior gap. Identification of relevant attitudinal, belief, and post-intention variables can be

accomplished using IBM to examine individual, cultural, socioeconomic, and environmental factors. Strategies and interventions to guide behavioral change can then be developed to encourage health-promoting behaviors (Fishbein & Cappella, 2006; Yzer, 2012)

**Description of Manuscripts**

This dissertation consists of three manuscripts that describe exploration of existing literature regarding the concept of weight management and WMIs in OWO AAF and the development and pretesting of a theoretically-grounded weight management questionnaire that may help identify the needs of OWO AAF who wish to improve their health and decrease risk through weight management. The first manuscript describes a conceptual model of weight management in OWO AAF developed through the process of dimensional analysis. Manuscript 2 is a scoping review of behavioral WMIs in OWO AAF, that reveals significant gaps in the literature. The final manuscript describes the development and pretesting of a weight management behavior questionnaire for OWO AAF.

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**Manuscript 1**

Sutton, S., Magwood, G., Nemeth, L., & Jenkins, C. (2016). Conceptual model of weight management in overweight and obese African American females. *Nursing Forum*. doi:10.1111/nuf.12165

**Abstract**

PROBLEM: Weight management of overweight and obese (OWO) African–American females (AAF) is a poorly defined concept, leading to ineffective treatment of overweight and obesity, prevention of health sequelae and risk reduction.

METHODS: A conceptual model of the phenomenon of weight management in OWO AAF was developed through dimensional analysis of the literature. Constructs were identified and sorted into the dimensions of perspective, context, conditions, process, and consequences and integrated into an explanatory matrix.

FINDINGS: Through dimensional analysis, weight management in OWOAAF was characterized as a multidimensional concept, defined from the perspective of weight loss in community-dwelling AAF. Behaviors associated with weight management are strongly influenced by intrinsic factors and extrinsic conditions, which influences engagement in the processes and consequences of weight management.

CONCLUSIONS: The resulting conceptual model of weight management in OWO AAF provides a framework for research interventions applicable in a variety of settings.

## Conceptual Model of Weight Management in Overweight and Obese African American Females

African-American females (AAF) are disproportionately affected by overweight and obesity when compared to other U.S. ethnic and gender groups. The prevalence of overweight and obesity in AAF has increased from approximately 63% to 80% over the last four to five decades, compared to an all population increase from 42% to 64%. While the overall prevalence data is concerning, the average BMI, or weight status, for AAF is significantly higher, thus increasing their risk for negative consequences of overweight and obesity. For example, approximately 24.3% of AAF are classified as overweight (BMI 25 – 29.9), which is comparable to the overall prevalence of 28.7% in all women. However, 57% of AAF are considered obese (BMI ≥30) compared to 35.8 % of all women (NCHS, 2012). overweight and obesity are well-known risk factors for vascular disease, type 2 diabetes mellitus, and malignancies and is associated with increased all-cause mortality (Flegel, Kit, Orpana, & Graubard, 2013). Further, OWO AAF tend to suffer more from the impacts of the disease, having increased health disparities, disability, decreased quality of life, and negative socioeconomic effects (Dor, Ferguson, Langwith, & Tan, 2010; Zhang & Rodriguez-Monguio, 2012).

Weight loss of five to 10% of body weight achieved by consuming fewer calories and increasing physical activity, resulting in negative balance, has been shown to decrease health risks and diseases, while increasing quality of life and longevity (Moyer & Force, 2012). Considering the diversity of the U.S. population, inclusive of all weight classes, the concept of weight management to address overweight and obesity incorporates the prevention of weight gain, weight loss, and weight loss maintenance. The overall goal of weight management in

overweight and obesity is to reduce the risk of disease from excessive intake of calories or unbalanced diet (National Institutes of Health [NIH], 2013).

A biopsychosocial approach to understanding health and disease not only identifies genetics as a cause of overweight and obesity, but also recognizes that culture, environment, and socioeconomic status are factors in the development of the disease and weight-related health behaviors. Reducing the obesity prevalence in AAF is a public health priority. To be effective, a better understanding of weight management specific to the population of OWO AAF is needed if more culturally acceptable and efficacious interventions are to be implemented and sustained. To this end, we present a conceptual model of the phenomenon of weight management in OWO AAF, developed through dimensional analysis of the literature. The model describes critical constructs and their relationships, clarifies attributes and influences and provides an organizing framework for the design and implementation for research and interventions.

## Methods

**Dimensional Analysis.** Developed by Schatzman (1991), based on grounded theory methodology and social interactionism, dimensional analysis is a method of defining complex phenomena in which meaning is socially constructed and dependent on perspective and context (Bowers & Schatzman, 2009). The purpose of dimensional analysis is to develop theory based on analysis of data that includes identifying and categorizing relevant dimensions, inferring relationships and defining connections among dimensions (Bowers & Schatzman, 2009). Dimensions are component parts of the phenomenon identified by examining these in the contextual reality in which it was created (Schatzman, 1991).

Once identified, dimensions are designated to one of five categories: perspective, context, conditions, process, or consequences. Perspective provides an organizing framework

from which patterns and relationships between dimensions can be appreciated. Meaning is based on an identified context, and includes social and historical views, interaction with others, and norms, and is determined by the viewpoint of informant and analyst (Schatzman, 1991). As the analysis continues, relationships between dimensions are identified and an explanatory matrix emerges (Bowers & Schatzman, 2009). A complete description of the method is beyond the scope of this article, but was described by Bowers and Schatzman (2009).

**Data Selection and Analysis.** A literature search of CINAHL and PubMed, application of inclusion and exclusion criteria, and review of bibliographies resulted in a total of 21 sample articles. See the Flow Diagram of Literature Search (Figure 1) for an explanation of the data selection process and Table 1 for a summary of sample articles. Sample articles were analyzed using processes described by Bowers and Schatzman (2009).

**Presentation of Results.** An explanatory matrix was developed to present the conceptual model (see Figure 2). An overview of perspective, context, conditions, processes and consequences is provided using a narrative format. In addition, details of the dimensions of conditions, processes and consequences are presented in tabular format (see Table 2).

## Conceptual Model

**Structure of the Conceptual Model.** The model that emerged from dimensional analysis of weight management in OWO AAF is a complex adaptive system, as related behaviors are determined by intricate relationships between intrinsic and extrinsic conditions, the behavioral process, and potential outcomes within the defined context and perspective (see Figure 2). In the model, the overarching influences of perspective and context are represented by an oval surrounding the other dimensions of conditions, process and outcomes.

Intrinsic conditions are illustrated by a Venn diagram, indicating that the conditions are overlapping and not exclusive of other conditions. For example, knowledge, by itself, is necessary to engage in many weight management behaviors, but may also be a barrier (lack of knowledge) or a motivation (understanding health benefits) for engaging in weight management behaviors. The separate constituents of extrinsic conditions meld together to have a combined impact on intrinsic conditions and process and are represented by the dot matrix. The behavioral change process is illustrated using an interlocked process diagram, indicating that effective weight management combines interventions and strategies to address the unique needs of OWO AAF. The last dimension, outcomes, is illustrated as as a pie diagram, which demonstrates that effective interventions will affect the whole person, including health and fitness, quality of life and behavior.

Complex relationships among the conditions, processes, and outcomes are represented by the arrows between the dimensions. Finally, the arrows on the oval that support perspective and contexts and surround the conditions, processes and outcomes, illustrate a vortex effect that results in a blending of the dimensions in which it is difficult to separate the individual constructs.

**Perspective.** A central organizing dimension is provided by the perspective, or lens, through which a phenomenon is viewed. Weight loss as a treatment for overweight and obesity provides the perspective for this dimensional analysis of weight management in OWO AAF. All of the sample articles included in this analysis cited the health risks associated with overweight and obesity as important considerations in weight management. In addition, overweight and obesity, especially in AAF, are associated with increased vulnerability, health disparities, and decreased quality of life. Socioeconomic consequences associated with increased cost of living

associated with medical care and disability due to overweight and obesity negatively impact standard of living. Treatment of overweight and obesity resulting in weight loss and moreover, weight maintenance, is an effective means of ameliorating these problems and generally improving circumstances.

**Context.** The identified context for this dimensional analysis is community-dwelling AAF. The sampled studies included research on diverse groups of AAF, however, many implied the groups are homogenous, assuming similar health-related cultural, ethnic and socioeconomic characteristics. While homogeneity is not a true characteristic of AAF, statistics regarding overweight and obesity are presented as an aggregate, without regard to health, culture, ethnicity, or socioeconomic status. In general, studies included in this analysis, while using national or regional statistics to justify research, tailored interventions to the either the sample population or individuals. Studies using qualitative methodologies or community based participatory research best described and addressed the unique characteristics of their sample population by including the viewpoints of the community and participants.

**Conditions.** Conditions are circumstances that influence or affect the process and resulting consequences (Schatzman, 1991). Two main conditions, or overarching dimensions were found in the literature related to this category: extrinsic and intrinsic.

***Intrinsic conditions.*** Subdimensions of intrinsic conditions including motivation, self-efficacy, knowledge, perceived vulnerability, and perceived barriers, are interactive and have significant impact on a person's ability to engage in weight management interventions. Motivation, critical to success in weight management, is impacted by knowledge, as well as, perceived vulnerability and barriers. When the health risks associated with overweight and obesity are not well understood, or when individuals do not see themselves as overweight or

obese, perceived vulnerability and motivation to lose weight may be lower. This is a barrier to action due to lack of knowledge and capacity to perceive vulnerability. On the other hand, a person who understands the threat of overweight and obesity to health, may be motivated by the desire for healthfulness associated with successful weight management (James, Pobee, Oxidine, Brown, & Joshi, 2012; Moore, Harris, & Wimberly, 2010). Self-efficacy can also effect motivation, as a person who feels confident in their abilities and success is more likely to engage in an activity (NHLBI, 2013).

***Extrinsic conditions.*** Factors that affect process and consequences external to the person include the subdimensions of culture, environment and social support. Many of the manuscripts included in this analysis found cultural norms concerning body size, physical activity and food preferences have significant impact on weight management, via their effect on intrinsic conditions, such as motivation, perceived barriers and perceived vulnerabilities. In addition, the environment in which many poor AAF live may be obesogenic, where unhealthy food options are abundant, while nutritious choices are not readily available. The environment may also be a barrier to physical activity, lacking easy access to resources supporting physical activity or having safety issues. In addition, weight management programs may not be available and accessible (NHLBI, 2013). Positive social support from family and friends, is an important motivator for weight management; however, they may contrarily act as enablers of harmful behaviors, discouraging exercise and fostering unhealthy eating habits to maintain the status quo (James, 2012; NHLBI, 2013)

***Process.*** The overarching dimension of process is behavioral change. It was described explicitly in all of the included manuscripts as the means to achieve sustained change in dietary and physical activity behaviors, resulting in weight loss. To succeed in changing behavior, the

interventions should meet certain needs, such as cultural sensitivity, knowledge and skills, and acceptability. If the interventions and facilitators cannot meet these requirements, then participants may not be able to overcome any real or perceived barriers preventing their engagement in the programs.

*Culturally sensitive.* The majority of the authors described programs as culturally tailored, sensitive or appropriate, with interventions specifically developed to meet needs of the participants determined by sociocultural context. Several studies used community-based participatory research, a collaborative approach that involves community members and leaders, practitioners and researchers to develop relevant and appropriate research. Peer educators, recruited from the community, were trained to act as facilitators and role models in small group interventions. Weight management interventions based in ambulatory care clinics also considered culture, but through individual evaluations, and tailored interventions based on environment, socioeconomic status, health, and personal preferences. In both community and ambulatory care settings, cultural sensitivity included attending to community and individual needs and preferences related to food choices, physical activity, goal planning, and desired outcomes.

*Knowledge and skills.* Behavioral changes cannot occur without the necessary knowledge and skills to implement them. Lack of knowledge concerning the health effects of obesity, healthy foods and exercise, as well as inexperience with healthy cooking techniques, precludes involvement and prevents success in weight loss endeavors (Kim et al., 2008). The majority of the interventions addressed learning needs, including calorie and fat gram counting, label reading, food shopping, menu planning, self-monitoring and goal setting, in interactive, small-

group settings. Several incorporated learning activities that taught participants how to problem solve to overcome real or perceived barriers to behavioral change.

*Acceptability*. The sub-dimension of acceptability includes constructs that address access, as well as engagement. For example, many interventions were located in easily accessible locations such as a local university or medical facility, community centers or churches. Most interventions included a flexible diet plans that encouraged incremental change in order to prevent frustration and relapse to earlier behaviors. This method of gradual change was also used to encourage increasing physical activity. Other characteristics that made interventions acceptable included interactive learning, role modeling, encouragement and praise, time for socialization, and involvement of family.

***Consequences.*** Consequences are the results of the interaction of conditions and process, as defined by perspective and context (Shatzman, 1991). All of the analyzed references explicitly or implicitly included weight loss, resulting in improved health and risk reduction, as a consequence of the intervention. Sustained behavioral change was frequently discussed as another desired outcome. Others focused on improved quality of life and increased fitness. James et al. (2012), reported improved physical appearance as a desired outcome, while McNabb et al. (1997) explicitly excluded it. Other studies inferred, by acknowledging the cultural acceptance of larger body sizes as attractive, that appearance is not considered an important outcome of weight management.

## Discussion

**Implications for research, practice and public policy.** This conceptual model of weight management offers a framework for developing and studying weight management interventions in OWO AAF in variety of settings. This framework can be used for development

of a questionnaire to assess the weight management needs of a community of OWO AAF and to inform development of interventions appropriate for that particular community. Weight management in OWO AAF is a complex phenomenon, dependent upon socioeconomic, cultural, community and individual factors that may differ significantly within a specifically race-defined population. The fluid representation and interaction of the identified constructs within the model visualizes the intricate nature of weight management and behavior change in OWO AAF. This contrasts with the simplistic negative energy balance equation presented as a means of weight management by federal agencies and disease prevention organizations (ADA, 2013; CDC, 2011a; HHS, 2013).

Research indicates that AAF are not as successful as white females in weight management studies (Fitzgibbon et al., 2012). The complexity of dimensional interactivity, in particular, within intrinsic conditions and impact of extrinsic conditions on intrinsic conditions and process, offers a possible explanation for their lack of success. Kumanyika et al. (2007) recommended that feasible and effective treatment programs require a focus on life contexts in African American communities and the complexities of behavioral change. Researchers and practitioners need to understand that intrinsic and extrinsic conditions are not just barriers or facilitators, but are multifaceted and interactive determinants of behavior.

Overweight and obese AAF are particularly vulnerable to health disparities, as they are more likely to have additional risk factors related to low socioeconomic status and urban residence, as well as having increased morbidity and mortality due to obesity-related diseases (Zhang & Rodriguez-Monguio, 2012). Healthy People 2020 (HHS, 2013) set a goal to reduce the proportion of adults who are obese to 30.5%. This supports the public health agency's purpose of preventing disease and adverse health outcomes. However, reduction of overweight

and obesity has been an ongoing goal for the past three decades – instead, the proportion of OWO AAF has continued to increase at alarming rate (NCHS, 2012). Focused resources on the development of effective behavioral weight programs can be developed to address causal and contributing factors related to weight management of OWO AAF.

**Limitations.** Some limitations to this study must be mentioned. First, the principal investigator is a novice researcher and this may have resulted in bias, as well as limiting of relevant sources, and an imperfect analysis. This was overcome through close collaboration with mentors regarding the scope and analysis of the data. Sources may have been excluded due to the purposefully narrow data search and inclusion criteria. Another limitation is the paucity of research on weight management in a sample population exclusive to AAF. By and large, studies of overweight and obesity and weight management include mixed races/ethnicities, mixed genders or a predominantly non-African American population. The majority of the relevant studies for this analysis were pilot studies, with small sample sizes and limited generalizability due to the homogeneity of the sample. As this study was concerned with the totality of how the literature defines the phenomenon of weight management, the results and statistical methods were not reported (although they were assessed during the CASP-directed evaluation of each manuscript), as they did not define acceptability of sources. Further, several studies did not meet CASP standards for reporting, leaving in question validity and reliability (Critical Appraisal Skills Program [CASP], 2013). These manuscripts were included in the study due the paucity of relevant research.

## Conclusion

Weight management in OWO AAF is a complex, multi-faceted interaction between intrinsic and extrinsic conditions that influence engagement in the process and outcomes of

behavioral change related to weight management. Using our conceptual model as a biopsychosocial framework for informing and developing weight management programs for OWO AAF needs to be evaluated in future interventions to examine if improved outcomes, such as sustained weight loss, improved quality of life, and risk reduction, can be achieved to meet the needs of OWO AAF.

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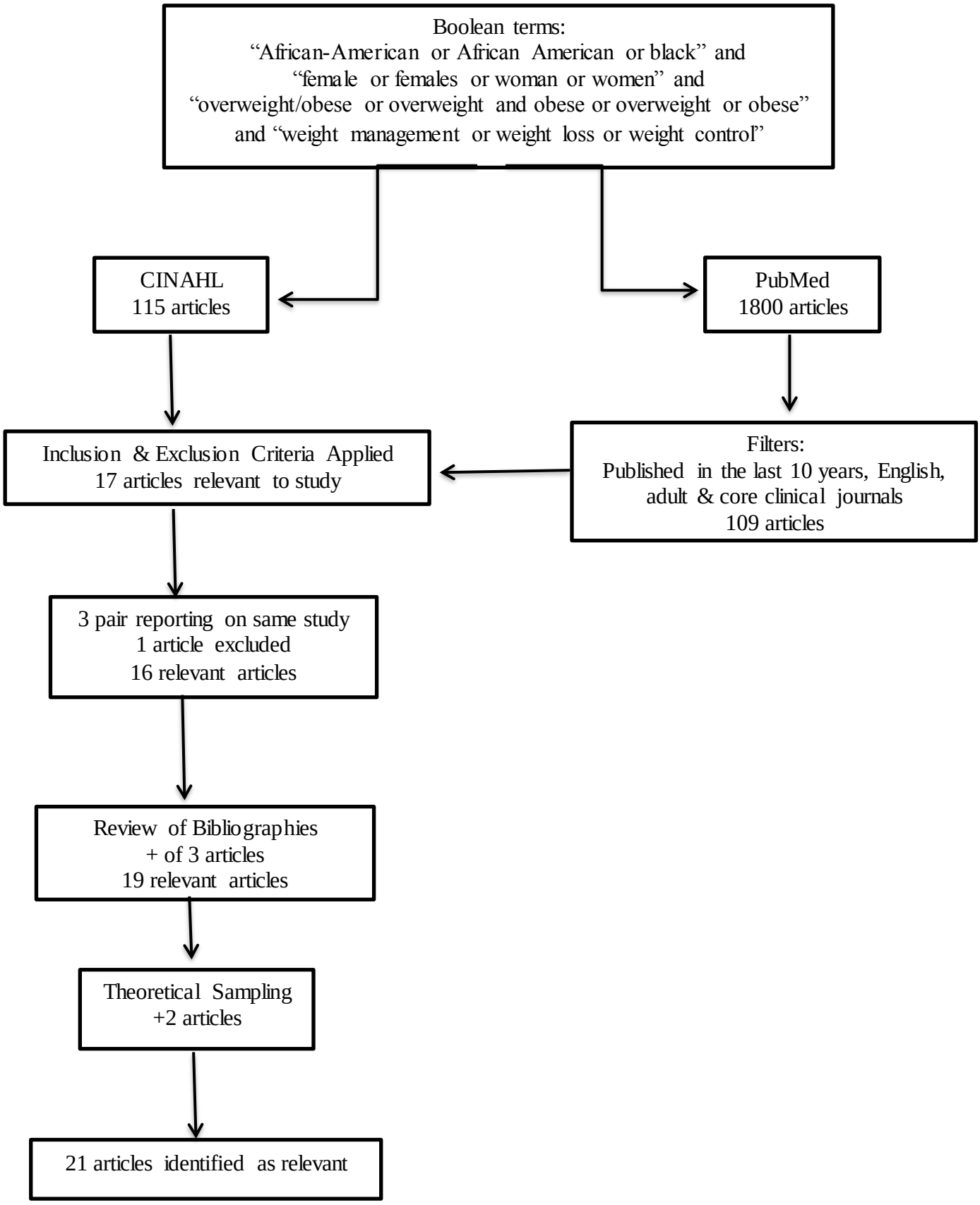
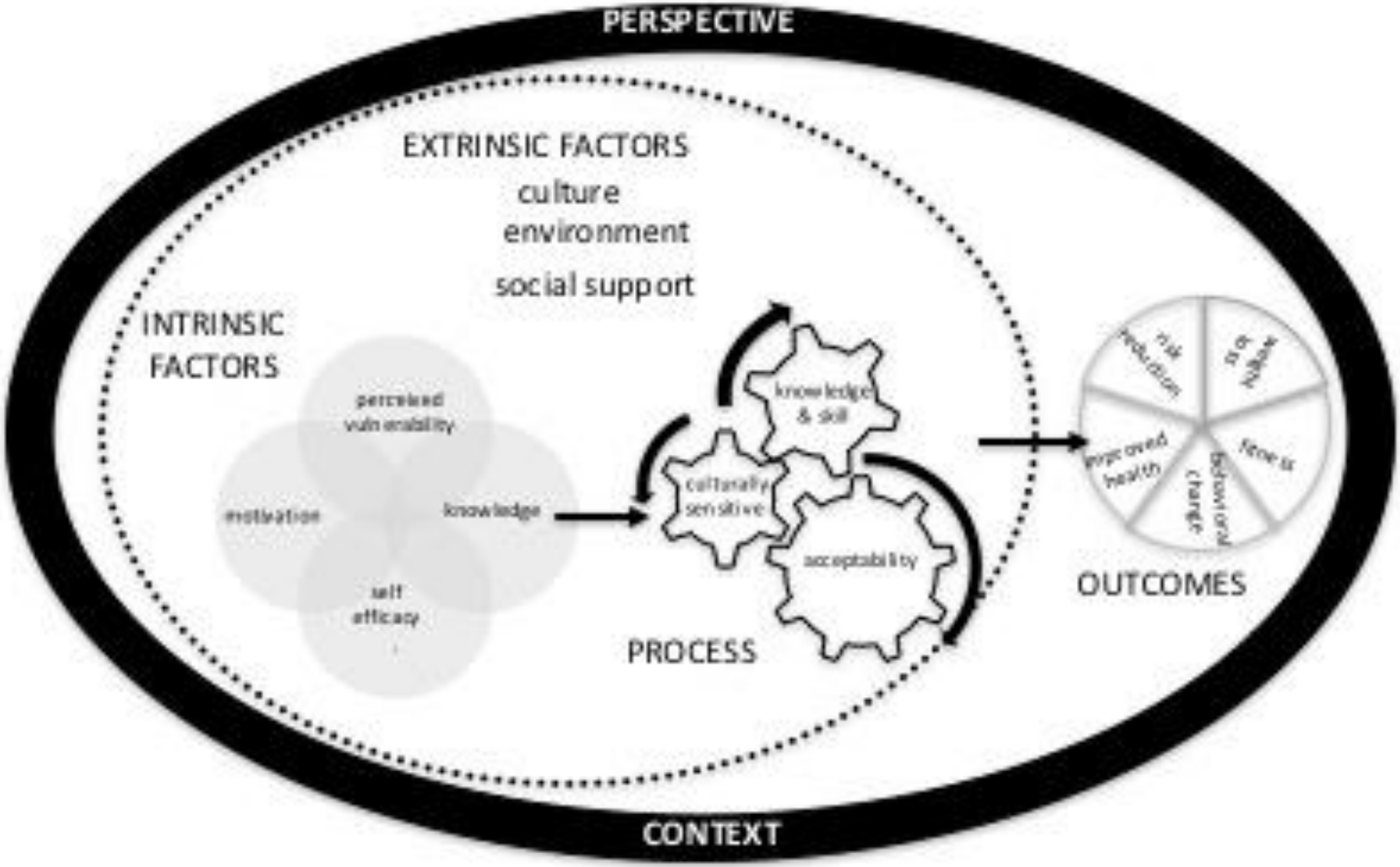

Boolean terms:
"African-American or African American or black" and
"female or females or woman or women" and
"overweight/obese or overweight and obese or overweight or obese"
and "weight management or weight loss or weight control"
CINAHL
115 articles
PubMed
1800 articles
Filters:
Published in the last 10 years, English,
adult & core clinical journals
109 articles
Inclusion & Exclusion Criteria Applied
17 articles relevant to study
3 pair reporting on same study
1 article excluded
16 relevant articles
Review of Bibliographies
+ of 3 articles
19 relevant articles
Theoretical Sampling
+2 articles
21 articles identified as relevant

Figure 2. Conceptual Model



| **Table 1. Summary of Articles** | | | |
|---|---|---|---|
| Ashley 1994 | *Purpose:* To study feasibility, attrition & effect of a weight management intervention<br>*Setting:* 4 urban areas<br>*Sample:* 67 OWO AAF | *Design:* Pilot, pretest-posttest, one group<br>*Methods:* Anthropomorphic & survey data collected at baseline & post intervention | *Intervention:* 10-week, once weekly group, calorie restricted, meal replacement weight management intervention.<br>*Measures:* Weight, behavior, insulin & glucose levels, attendance & attrition |
| Befort 2008 | *Purpose:* To study effect of motivational interviewing on effectiveness weight management intervention<br>*Setting:* Community center, Kansas City, MO<br>*Sample:* 44 obese AAF | *Design:* Pilot, pretest-posttest, RCT<br>*Methods:* Anthropomorphic & survey data collected at baseline & post-intervention | *Intervention:* 16-week, once weekly, group, weight management intervention. *Measures:* Weight, diet, physical activity, self-efficacy, adherence & satisfaction |
| Cox 2013 | *Purpose:* To evaluate effect & feasibility of stress management augmented weight management intervention<br>*Setting:* Not discussed<br>*Sample:* 44 OWO AAF* | *Design:* Pretest-posttest, control group comparison<br>*Methods:* Anthropomorphic, physiologic & survey data collected at baseline & post-intervention | *Intervention:* 12-week, once weekly, group, stress management augmented intervention.<br>*Measures:* Weight, perceived stress levels, cortisol levels, adherence & satisfaction |
| Cowart 2010 | *Purpose:* To design & pilot a culturally tailored weight management intervention<br>*Setting:* Urban church, Syracuse, NY<br>*Sample:* Initial assessment 155 AA adults; Intervention sample 55 OWO AA, predominantly female | *Design:* Mixed Methods<br>Qualitative: CBPR<br>Quantitative: Pilot, pretest-posttest, single group<br>*Methods:* Data collected at baseline & post intervention. Data collection & analysis methods not clearly described. | *Intervention:* 12-week, 3-hr weekly, group weight management intervention. *Measures:* Diet, physical, quality of life, satisfaction |
| Davis-Martin 2006 | *Purpose:* To study effectiveness of an individually tailored, physician-delivered weight management intervention<br>*Setting:* Two family practice clinics, Baton Rouge, LA<br>*Sample:* 144 OWO AAF | *Design:* Pretest-posttest, RCT<br>*Methods:* Anthropomorphic & survey data collected at baseline & post-intervention | *Intervention:* 6 monthly appointments, approx 15 min with PCP, who provided individually-tailored weight management intervention.<br>*Measures:* Weight. |
| | | | *(Continued)* |

| **Table 1. Continued** | | | |
|---|---|---|---|
| Dodani 2010 cf. Dodani, 2009 | *Purpose:* To study the feasibility & effect of a CBPR, faith-based weight management intervention<br>*Setting:* Predominantly AA church, Augusta, GA<br>*Sample:* 41 predominantly OWO AAF** | *Design:* Pilot, pretest-posttest, single group<br>*Methods:* Anthropomorphic data collected at baseline & post-intervention | *Intervention:* 12-week, once weekly, faith-based, group weight management intervention.<br>*Measures:* Weight. |
| Dodoni 2009 cf. Dodani, 2010 | *Purpose:* To design a culturally tailored, faith-based behavioral weight management intervention using CBPR<br>*Setting:* Predominantly AA (Cowart et al., 2010; Dodani & Fields, 2010; Dodani, Kramer, Williams, Crawford, & Kriska, 2009; Goldfinger, Arniella, Wylie-Rosett, & Horowitz, 2008; Kim et al., 2008; McNabb, Quinn, Kerver, Cook, & Karrison, 1997; Sbrocco, Osborn, Clark, Hsiao, & Carter, 2012), Augusta, GA<br>*Sample:* Predominantly AAF | *Design:* Qualitative, CBPR<br>*Methods:* Data collected from 4 focus group & church advisory board informed development of intervention | This article details the development of a culturally-tailored, faith-based weight management intervention using CBPR methodology.<br>It provides a rich description of the 12-session Fit Body & Soul intervention. |
| Fitzgibbon 2005a | *Purpose:* To estimate the effect of adding a faith-based component to a weight management intervention<br>*Setting:* Hospital facilities, Chicago, IL<br>*Sample:* 64 OWO AAF | *Design:* Pretest-posttest, RCT<br>*Methods:* Anthropomorphic & survey data collected at baseline & post-intervention | *Intervention:* 12-week, twice weekly, faith-based, group weight management intervention.<br>*Measures:* Weight, diet, physical activity. |
| Fitzgibbon 2005b | *Purpose:* To assess feasibility & efficacy of combined breast health/weight management program<br>*Setting:* Community center & university facilities, Chicago, IL<br>*Sample:* 59 OWO AAF | *Design:* Pilot, pretest-posttest, *RCT using two cohorts*<br>*Methods:* Anthropomorphic & survey data collected at baseline(Artinian et al., 2010) & post-intervention | *Intervention:* 20-week, twice weekly, group combined breast health & weight management intervention.<br>*Measures:* Weight, diet, physical activity, breast health behavior. |
| | | | *(Continued)* |

| **Table 1. Continued.** | | | |
|---|---|---|---|
| Fitzgibbon 2010 cf. Stolley, 2009 | *Purpose:* To test the efficacy of a 6-month weight management intervention, followed by a 12-month weight-loss maintenance intervention<br>*Setting:* University facilities, Chicago, IL<br>*Sample:* 213 obese AAF | *Design:* Interrupted time series, randomized control group comparison<br>*Methods:* Anthropomorphic data collected at baseline, 6-months & 18-months | *Intervention:* Phase I: 6-month, twice weekly, group weight management intervention<br>Phase I: 12-month, twice weekly group for 6 months, then once weekly for 3 months, then once monthly.<br>*Measures:* Weight, diet, physical activity. |
| Goldfinger 2008 | *Purpose:* To study feasibility & effect of CBPR-based, peer-led weight loss intervention<br>*Setting:* Predominantly AA church, Harlem, NY<br>*Sample:* 26 OWO AA, predominantly female | *Design:* Pilot, pretest-posttest, single group<br>*Methods:* Anthropomorphic & survey data collected at baseline & post-intervention | *Intervention:*8-week, once weekly, group weight management intervention developed using focus groups & CBPR.<br>*Measures:* Weight, behaviors, knowledge, attitude. |
| James 2012 | *Purpose:* To explore knowledge, attitude, & beliefs about OWO & weight management in OWO AAF<br>*Setting:* unidentified predominantly AA<br>*Sample:* 50 OWO AAF | *Design:* Qualitative, focus group<br>*Methods:* Focus groups using semi-structured interviewing techniques. Data analyzed using thematic analysis & confirmed using inter-rater reliability. | Health Belief Model informed development of interview guide. Results will be used to develop a culturally-tailored weight management intervention. |
| Karanja 2002 | *Purpose:* To study the effect of a culturally adapted weight management intervention<br>*Setting:* Not described<br>*Sample:* 66 obese AAF | *Design:* Pilot, pretest-posttest, single group<br>*Methods:* Anthropomorphic & survey data collected at baseline & post-intervention | *Intervention:*6-month, once weekly group weight management program adapted from a contemporary intervention using data gleaned from focus groups & the literature.<br>*Measures:* Weight, diet, physical activity, attendance. |
| Kaul 1979 | *Purpose:* To study effect of a physician-led, individualized weight management intervention<br>*Setting:* University associated family practice clinic, Washington, DC<br>*Sample:* 23 OWO AAF | *Design:* Pretest-posttest, single group<br>*Methods:* Anthropomorphic data collected at baseline & post-intervention | *Intervention:*3-month individualized physician-led weight management intervention developed by team consisting of a physician, a nutritionist, & a health educator.<br>*Measures:* Weight. |
| | | | *(Continued)* |

| **Table 1. Continued.** | | | |
|---|---|---|---|
| Kaul 1999 | *Purpose:* To study effect of a physician-led, individualized weight management intervention<br>*Setting:* University associated bariatric clinic, Washington, DC<br>*Sample:* 16 obese AA, predominantly female | *Design:* Pretest-posttest, single group<br>*Methods:* Anthropomorphic data collected at baseline & post-intervention | 7-week individualized physician-led weight management intervention developed by team consisting of a physician, nutritionist & nurse.<br>*Measures:* Weight. |
| Kim 2008 | *Purpose:* To study the feasibility & effect of a CBPR, faith-based, peer-led weight management intervention<br>*Setting:* 4 rural predominantly AA churches in central NC<br>*Sample:* 73 OWO AA, predominantly female | *Design:* Pretest-posttest, RCT<br>*Methods:* Anthropomorphic & survey data collected at baseline & post-intervention | *Intervention:* 8-week, once weekly group weight management intervention developed using focus groups & CBPR.<br>*Measures:* Weight, diet, physical activity |
| Kumanyika 2005 | *Purpose:* To study the effectiveness of post-intervention counseling on continued weight loss & weight management.<br>*Setting:* University based family practice clinic<br>*Sample:* 128 obese AA, predominantly female | *Design:* Interrupted time series, control & parallel group comparison<br>*Methods:* Anthropomorphic, physiologic, & survey data collected at baseline, 10 weeks & 8 or 20 months (depending on treatment group) | *Intervention:* Phase I: 10-week, once weekly group weight management intervention.<br>Phase II: Treatment group 1: 3 months of twice monthly meetings, followed by 12 monthly meetings. Treatment group 2: Staff-facilitated self-help with ad hoc telephone support, but no group meetings.<br>*Measures:* Weight, BP, lipids & blood glucose. |
| Mastin 2012 | *Purpose:* To explore knowledge, attitude, & beliefs about OWO & weight management in OWO AAF<br>*Setting:* Low-income community in Flint, MI<br>*Sample:* 46 OWO AAF | *Design:* Qualitative, individual interviews<br>*Methods:* Structured, using survey & open-ended questions. Data collection & analysis methods were not clearly described | Social Cognitive Theory informed development of interview guide |

*(Continued)*

| **Table 1. Continued.** | | | |
|---|---|---|---|
| McNabb 1997 | *Purpose:* To evaluate effectiveness of church-based weight management program<br>*Setting:* Three urban AA churches<br>*Sample:* 39 obese AAF | *Design:* Pilot, pretest-posttest, RCT<br>*Methods:* Anthropomorphic, physiologic, & survey data collected at baseline & post-intervention | *Intervention:* 14-week, once weekly, group weight management intervention.<br>*Measures:* Weight, waist circumference, & diet. |
| Sbrocco 2012 | *Purpose:* To assess the relationship between the stage of change & behavioral outcomes in an obesity treatment intervention<br>*Setting:* A predominantly AA church & a medical school, Washington, DC<br>*Sample:* 55 OWO AAF | *Design:* Pretest-posttest, parallel group comparison<br>*Methods:* Anthropomorphic, physiologic, & survey data collected at baseline & post-intervention | *Intervention:* 13-week, once weekly, group weight management intervention.<br>*Measures:* Relationship between (1) pretreatment stage of change & weight loss & physical fitness; (2) stage progression & weight loss & physical fitness |
| Stolley 2009 cf. Fitzgibbon, 2010 | *Purpose:* To test the efficacy of a 6-month weight management intervention<br>*Setting:* University facilities, Chicago, IL<br>*Sample:* 213 obese AAF | *Design:* Pretest-posttest, RCT<br>*Methods:* Anthropomorphic & survey data collected at baseline & post-intervention | *Intervention:* 6-month, twice weekly, group weight management intervention. *Measures:* Weight, diet & physical activity. |
| Wilcox 2011 | *Purpose:* To study the effectiveness of a CBPR group-based behavioral & social support weight management intervention<br>*Setting:* Columbia, SC<br>*Sample:* 180 OWO females, predominantly AA | *Design:* Interrupted time series, RCT<br>*Methods:* Anthropomorphic & survey data collected four times: baseline, at completion of phase I & phase II, & 12-weeks post-intervention | *Intervention:* Phase I: 16-week, once weekly, group weight management intervention<br>Phase II: 8-week, once weekly, telephone maintenance counseling<br>*Measures:* Weight, waist circumference, diet, physical activity, fitness, eating behaviors, self-efficacy, social support |
| * This particular sample demonstrated a relatively high level of education (70% college graduates or some graduate school) & employment (96% full-time) compared to other samples<br>** 73% with graduate degrees | | | |

| **Table 2. Summary of Dimensions** | |
|---|---|
| CONDITIONS | |
| INTRINSIC | |
| Motivation | •desire for changing behavior (Befort, Nollen, et al., 2008; Davis Martin et al., 2006; Kim et al., 2008; Mastin et al., 2012)<br>•crucial to success (Befort, Nollen, et al., 2008; Cowart et al., 2010; Fitzgibbon et al., 2010; Stolley et al., 2009)<br>•appearance (James et al., 2012; McNabb et al., 1997)<br>•desire to improve health & prevent disease (Ashley et al., 1994; Cowart et al., 2010; Fitzgibbon et al., 2005b; Fitzgibbon et al., 2010; Wilcox et al., 2011) |
| Self-efficacy | •confidence in ability to change behavior (Befort, Nollen, et al., 2008; Davis Martin et al., 2006; Mastin et al., 2012)<br>•empowerment (Cowart et al., 2010; Dodani & Fields, 2010)<br>•self-regulation & self-monitoring (Davis Martin et al., 2006; Fitzgibbon et al., 2010; Stolley et al., 2009; Wilcox et al., 2011)<br>•frustration related to previous experiences (Ashley et al., 1994; James et al., 2012; Mastin et al., 2012; Sbrocco et al., 2012)<br>•integral to weight management success (James et al., 2012)<br>•behavioral capacity (Wilcox et al., 2011) |
| Knowledge | •understanding of relationship between overweight and obesity & health (Cowart et al., 2010; Kaul & Nidiry, 1999; Mastin et al., 2012; McNabb et al., 1997)<br>•guidelines for exercises (James et al., 2012; Mastin et al., 2012)<br>•erroneous understanding of overweight and obesity (McNabb et al., 1997)<br>•dietary guidelines & making nutritious choices (Kim et al., 2008; Mastin et al., 2012) |
| Perceived vulnerability | •perception of threat to health (Cowart et al., 2010; James et al., 2012)<br>•perception of weight status (Cowart et al., 2010; James et al., 2012; Kaul & Nidiry, 1999; Mastin et al., 2012)<br>•fatalism; heredity as cause of illness, rather than overweight and obesity (Mastin et al., 2012)<br>•restricts activities (James et al., 2012) |
| Perceived barriers | •competing responsibilities (Cowart et al., 2010; Fitzgibbon et al., 2005a; Fitzgibbon et al., 2005b; James et al., 2012; Kim et al., 2008; Mastin et al., 2012; Wilcox et al., 2011)<br>•social stigma (James et al., 2012; Wilcox et al., 2011)<br>•lack of willpower (Cowart et al., 2010; James et al., 2012; Mastin et al., 2012)<br>•emotional eating (Kim et al., 2008)<br>•lack of knowledge (James et al., 2012)<br>•stress, depression (Cox et al., 2013) |
| *(Continued)* | |

| **Table 2. Continued** | |
|---|---|
| CONDITIONS | |
| EXTRINSIC | |
| Culture | •acceptance of larger body sizes (Kim et al., 2008; McNabb et al., 1997; Sbrocco et al., 2012)<br>•perception regarding physical activity (Mastin et al., 2012; Wilcox et al., 2011)<br>•food preferences (Davis Martin et al., 2006; Fitzgibbon et al., 2005a; Fitzgibbon et al., 2005b; Kim et al., 2008; Mastin et al., 2012; McNabb et al., 1997; Wilcox et al., 2011)<br>•spirituality & faith (Cowart et al., 2010; Dodani & Fields, 2010; Dodani et al., 2009; Fitzgibbon et al., 2005a; Kim et al., 2008; Sbrocco et al., 2012)<br>•genetic predisposition to obesity (James et al., 2012) |
| Environment | •poor availability and affordability of nutritionally dense food (Mastin et al., 2012; Wilcox et al., 2011)<br>•easily available and affordable unhealthy food option (Davis Martin et al., 2006; Mastin et al., 2012)<br>•poor access to physical activity due to safety or location (Mastin et al., 2012; Wilcox et al., 2011)<br>•poor access to care (Goldfinger et al., 2008) |
| Social support | •encouragement from family & friends (Fitzgibbon et al., 2005a; Fitzgibbon et al., 2005b; Kim et al., 2008; Mastin et al., 2012; Wilcox et al., 2011)<br>•negative (James et al., 2012; Mastin et al., 2012)<br>•provides motivation (Cowart et al., 2010; Karanja et al., 2002)<br>•faith & community (Mastin et al., 2012) |
| PROCESS | |
| BEHAVIORAL CHANGE | |
| Culturally sensitive | •relevant, based on community needs and/or input (Cowart et al., 2010; Dodani & Fields, 2010; Dodani et al., 2009; Fitzgibbon et al., 2010; Goldfinger et al., 2008; Karanja et al., 2002; Kim et al., 2008; McNabb et al., 1997; Sbrocco et al., 2012; Stolley et al., 2009)<br>•culturally tailored or culturally sensitive (Ashley et al., 1994; Cowart et al., 2010; Davis Martin et al., 2006; Fitzgibbon et al., 2005a; Fitzgibbon et al., 2005b; Karanja et al., 2002; Kumanyika et al., 2005; Wilcox et al., 2011)<br>•support from community & church leaders(Cowart et al., 2010; Dodani & Fields, 2010; Dodani et al., 2009; Goldfinger et al., 2008; Kim et al., 2008)<br>•faith-based (Cowart et al., 2010; Dodani & Fields, 2010; Dodani et al., 2009; Fitzgibbon et al., 2005a; Kim et al., 2008; Sbrocco et al., 2012)<br>•use of lay-health leaders (Ashley et al., 1994; Cowart et al., 2010; Cox et al., 2013; Dodani & Fields, 2010; Dodani et al., 2009; Goldfinger et al., 2008; Kim et al., 2008; McNabb et al., 1997) |
| *(Continued)* | |

| **Table 2. Continued** | |
|---|---|
| PROCESS | |
| BEHAVIORAL CHANGE | |
| Knowledge & Skills | • physical activity/exercise (Ashley et al., 1994; Cowart et al., 2010; Dodani et al., 2009; Fitzgibbon et al., 2010; Goldfinger et al., 2008; Karanja et al., 2002; Kaul & Nidiry, 1999; Kim et al., 2008; Kumanyika et al., 2005; Stolley et al., 2009; Wilcox et al., 2011)<br>• skills: calorie counting, label reading, food shopping, healthy cooking, recipe modification, problem solving (Cowart et al., 2010; Davis Martin et al., 2006; Dodani et al., 2009; Fitzgibbon et al., 2005b; Fitzgibbon et al., 2010; Goldfinger et al., 2008; Karanja et al., 2002; Kaul et al., 1979; Kim et al., 2008; Kumanyika et al., 2005; McNabb et al., 1997; Wilcox et al., 2011)<br>•nutritious, appealing food choices (Cowart et al., 2010; Davis Martin et al., 2006; Dodani et al., 2009; Fitzgibbon et al., 2010; Kaul & Nidiry, 1999; Kumanyika et al., 2005; Stolley et al., 2009; Wilcox et al., 2011)<br>•stress management (Cox et al., 2013; Kumanyika et al., 2005; Wilcox et al., 2011)<br>•overcoming barriers (Davis Martin et al., 2006; Dodani et al., 2009; Kim et al., 2008; Kumanyika et al., 2005; Wilcox et al., 2011)<br>•self-monitoring through food and exercise diaries (Cowart et al., 2010; Davis Martin et al., 2006; Dodani et al., 2009; Fitzgibbon et al., 2010; Karanja et al., 2002; Kaul et al., 1979; Kumanyika et al., 2005; Mastin et al., 2012; Stolley et al., 2009; Wilcox et al., 2011)<br>•goal setting (Cox et al., 2013; Davis Martin et al., 2006; Dodani et al., 2009; Fitzgibbon et al., 2010; Kumanyika et al., 2005; Mastin et al., 2012; Stolley et al., 2009; Wilcox et al., 2011) |
| Acceptability | •community-based and easily accessible (Fitzgibbon et al., 2005b; Goldfinger et al., 2008; Karanja et al., 2002; McNabb et al., 1997; Sbrocco et al., 2012)<br>•flexible (Fitzgibbon et al., 2010; Karanja et al., 2002; Kumanyika et al., 2005; McNabb et al., 1997; Sbrocco et al., 2012; Stolley et al., 2009)<br>•slow, incremental changes to prevent failure and relapse (Cowart et al., 2010; Cox et al., 2013; Davis Martin et al., 2006; Dodani et al., 2009; Fitzgibbon et al., 2010; Kaul & Nidiry, 1999; Kaul et al., 1979; Kumanyika et al., 2005; McNabb et al., 1997; Sbrocco et al., 2012; Stolley et al., 2009; Wilcox et al., 2011)<br>•group-based to provide support (Cowart et al., 2010; Goldfinger et al., 2008; Karanja et al., 2002; Kumanyika et al., 2005; Wilcox et al., 2011)<br>•involving family and friends (Cowart et al., 2010; Fitzgibbon et al., 2010; Karanja et al., 2002; Mastin et al., 2012; Sbrocco et al., 2012)<br>•provide time for socializing (Fitzgibbon et al., 2010; Kim et al., 2008; Sbrocco et al., 2012; Stolley et al., 2009; Wilcox et al., 2011)<br>•encouragement and praise (Befort, Nollen, et al., 2008; Cowart et al., 2010)<br>•role-modeling (Cowart et al., 2010; Fitzgibbon et al., 2010; Goldfinger et al., 2008; Karanja et al., 2002; McNabb et al., 1997; Stolley et al., 2009)<br>•active learning (Ashley et al., 1994; Cowart et al., 2010; Dodani et al., 2009; Karanja et al., 2002; McNabb et al., 1997; Wilcox et al., 2011)<br>•use of health care providers/primary care (Davis Martin et al., 2006; Kaul & Nidiry, 1999; Kaul et al., 1979) |
| *(Continued)* | |

**Table 2. Continued**

| CONSEQUENCES |
| --- |
| •sustained behavioral (diet & physical activity) change (Befort, Nollen, et al., 2008; Cowart et al., 2010; Davis Martin et al., 2006; Dodani et al., 2009; Fitzgibbon et al., 2005a; Fitzgibbon et al., 2005b; Fitzgibbon et al., 2010; Goldfinger et al., 2008; Kaul & Nidiry, 1999; Kaul et al., 1979; McNabb et al., 1997; Sbrocco et al., 2012) |
| •improved health & reduced risk (Ashley et al., 1994; Davis Martin et al., 2006; Dodani & Fields, 2010; Dodani et al., 2009; Fitzgibbon et al., 2005b; Goldfinger et al., 2008; James et al., 2012; Kaul & Nidiry, 1999; Kumanyika et al., 2005) |
| •weight loss (Ashley et al., 1994; Cox et al., 2013; Fitzgibbon et al., 2005a; Fitzgibbon et al., 2005b; Fitzgibbon et al., 2010; Goldfinger et al., 2008; Kaul & Nidiry, 1999; Kaul et al., 1979; Kim et al., 2008; Kumanyika et al., 2005; McNabb et al., 1997; Sbrocco et al., 2012; Stolley et al., 2009; Wilcox et al., 2011) |
| •improved quality of life (Ashley et al., 1994; Cowart et al., 2010; Goldfinger et al., 2008; James et al., 2012) |
| •increased fitness (Sbrocco et al., 2012; Wilcox et al., 2011) |

**Manuscript 2**

Sutton, S., Magwood, G., Jenkins, C., & Nemeth, L. (2016). A scoping review of behavioral weight management interventions in overweight/obse African-American females. *Western Journal of Nursing Research*. Advance online publication. doi: 10.1177/0193945916635160

**Abstract**

African American females are adversely affected by overweight and obesity and accompanying physical, psychosocial, and economic consequences. Behavioral weight management interventions are less effective in addressing the needs of overweight and obese African American females. The objective of this scoping review was to explore weight management research in this population to identify key concepts, gaps in the literature, and implications for future research. Analyses revealed a broad array in purpose, theoretical frameworks, settings, study designs, interventions, intervention strategies, and outcome variables, making comparison difficult. Many of the articles included in this review did not provide a rich description of methods, which hinder their use in the development of future studies. Consistent application of a combined theory may address the gaps identified in this review by providing a reliable method for assessing needs, developing interventions, and evaluating the effectiveness and fidelity of behavioral weight management interventions in overweight and obese African American females.

## A Scoping Review of Behavioral Weight Management Interventions in Overweight/Obese African American Females

The prevalence of overweight and obesity and the associated physical, psychological, and economic consequences disproportionately affect adult African American females (AAF) in the United States (Flegal, Carroll, Kit, & Ogden, 2012; National Center for Health Statistics, 2012; Wang, McPherson, Marsh, Gortmaker, & Brown, 2011). The U.S. Department of Health and Human Services, through various agencies, has addressed the problem of overweight and obesity since the late 1970s, yet the number of Americans who are overweight or obese, including AAF, continues to rise. Behavioral change interventions comprehensively addressing diet and physical activity should result in weight loss and risk reduction (National Heart, Lung, and Blood Institute [NHLBI], 2013), but existing research insufficiently addresses the needs of OWO AAF, as evidenced by their limited participation in weight management research. Furthermore, OWO AAF who do participate in research studies demonstrate less success with weight loss, weight loss maintenance, and risk reduction. In addition, Kumanyika et al. (2007) pointed out that recommendations for weight loss and maintenance are based on research with mostly White populations and without consideration of cultural, environmental, and socioeconomic variables that help determine weight-related behaviors in AAF. Research studies examining weight management interventions specific to AAF are limited and vary widely in rigor, sample size, setting, population, use of theory, interventions, and outcome variables, and lack clarity and cohesiveness (Fitzgibbon et al., 2012; Osei-Assibey & Boachie, 2012; Seo & Sa, 2008).

### Purpose

This study proposed to answer the following questions: (a) What is the existing evidence about the type and application of behavioral weight management interventions in OWO AAF?

(b) What outcome measures have been used to assess effectiveness of behavioral weight management interventions in OWO AAF? and (b) What are existing gaps in the literature on behavioral weight management interventions in OWO AAF?

Overweight and obesity are leading causes of preventable death in the United States (Centers for Disease Control and Prevention, 2014) and are risk factors for cardiovascular disease, hypertension, stroke, diabetes, depression, osteoarthritis, and some cancers (Hruby & Hu, 2014). In addition, overweight and obesity are associated with disability, decreased quality of life, and early death (Borrell & Samuel, 2014). Increased medical spending, lost wages, and associated employer costs pose an additional economic burden (Bauer, Briss, Goodman, & Bowman, 2014; Cawley & Meyerhoefer, 2012). Health care costs associated with overweight and obesity account for one fifth of U.S. health expenditures (Hruby & Hu, 2014) and average approximately US $2,700 in individual medical costs annually (Cawley & Meyerhoefer, 2012).

The NHLBI (2013) recommended comprehensive lifestyle interventions for the prevention and treatment of overweight and obesity that include diet, physical activity, and behavioral change. However, these recommendations are not new or innovative, and have been endorsed for the past 15 years without reduction in the prevalence of overweight and obesity. Comprehensive lifestyle interventions need to address cultural, socioeconomic, environmental, and individual determinants of weight (Agyemang & Powell-Wiley, 2013; Fitzgibbon et al., 2012; Osei-Assibey & Boachie, 2012; Walker & Gordon, 2013). This study used a scoping review methodology to identify and map the literature that has evaluated the effectiveness of behavioral weight management in overweight and obese AAF.

## Method

**Scoping review.** Scoping reviews are a method of knowledge synthesis used to gain a broad understanding of available research based on relevance to well-defined research questions without being limited by study design or quality (Arksey & O'Malley, 2005). Scoping reviews differ from systematic reviews by the breadth of the research question and depth of analysis. Systematic reviews are usually conducted to determine quality of available research and to answer a specific research question, whereas scoping reviews are used to identify what available research has not explored. Kong et al. (2014) and Fitzgibbon et al. (2012) performed systematic reviews of weight loss interventions and AAF limited to studies with control groups to identify effective, culturally adapted behavioral weight loss interventions. Findings of scoping reviews are used to map the literature by identifying components of pertinent literature, such as study design, theoretical framework, setting, population, intervention, variables of interest, and outcomes, leading to an appreciation of the breadth and depth of the research. Scoping reviews are used to explore research on a particular topic, identify key concepts, and disseminate findings, as well as identify gaps in existing research (Arksey & O'Malley, 2005; Levac, Colquhoun, & O'Brien, 2010).

This scoping review used methods described by Arksey and Malloy (2005) and Levac et al. (2010) including five steps: (a) identification of the research question, (b) identification of relevant studies, (c) study selection, (d) charting the data, and (e) collating, summarizing, and reporting the results. The method of review is described in a step-wise linear fashion, but an iterative process is applied, with each step revisited and refined throughout the research process. Findings are reported using a narrative format as well as tables, charts, and diagrams (Arksey & O'Malley, 2005; Colquhoun et al., 2014; Levac et al., 2010)

**Identification of relevant studies.** A systematic search strategy was used to identify relevant studies. First, searches of three electronic databases (CINAHL, PubMED, and PsycINFO) were performed using the keywords and terms *weight reduction programs* OR *weight control* OR *weight management, African American*, and *female* and focused on the concepts, target populations, and health outcomes of interest. A research librarian was consulted to determine most effective strategies for each database; for example, whether use of MeSH terms was more effective than keywords in PubMed. The search terms were intentionally broad, to capture as much relevant literature as possible. In addition, a search of the Cochrane database was performed using the term *weight loss*. The database searches resulted in an initial pool of 331 articles.

**Study selection.** Initial screening of relevant studies resulted in 92 articles. Articles were deemed relevant if their abstracts described weight management intervention studies that included OWO AAF in their samples. Articles were excluded if the abstracts did not describe an intervention study or if the population did not include OWO AAF. After removal of duplicate studies, inclusion and exclusion criteria were applied to remaining articles, leaving a sample of 23 articles. Key criteria for selection included the following:

- Weight loss as an outcome variable of interest,
- Behavioral weight change interventions,
- Study populations at least 50% OWO AAF, and
- Original research.

Behavioral interventions attempt to modify health behaviors to improve health or reduce risk (Glanz & Bishop, 2010). Studies that involved non- OWO AAF sample participants were included in this review due to the lack of available research exclusive to or with a larger majority

of AAF. Selected articles whose sample populations are not limited to OWO AAF specifically discuss targeting OWO AAF.

Articles were excluded if interventions were identified as non-behavioral, such as pharmacological or surgical; weight loss was unintentional; the sample population was limited to children or adolescents; or if the focus was on eating disorders or the impact of chronic illness on weight loss. Key journals and reference lists of systematic reviews identified during the initial database searches were hand searched for relevant articles, and those identified by hand searches were included in the scoping sample, resulting in an additional five studies. Refer to Figure 1 for a summary of the selection process.

**Charting and collating the data.** A data extraction form was created to provide a systematic approach for collecting pertinent data. Data were then collated using a tabular format based on the pertinent constructs of behavioral change research.

## Results

A total of 28 articles were included in the review. Two articles (Mayer-Davis et al., 2001; Mayer-Davis et al., 2004) described the pilot and trial of the same intervention, and another pair described findings from different assessment periods of the same study (Fitzgibbon et al., 2010; Stolley et al., 2009). Although interventions should use theory (National Research Council, 2002) to address multiple determinants, including knowledge, skills, attitudes, and beliefs (Glanz & Bishop, 2010), the use of theoretical frameworks varied, as did the study designs and settings; sample sizes, target knowledge, attitude, skills, and behaviors; and intervention strategies.

**Theoretical framework.** Refer to Table 1. Glanz and Bishop (2010) argued that effective behavioral change interventions are based in theory, yet 10 of the identified articles did not explicitly or implicitly report basing their behavioral interventions on a theoretical

framework (Ard et al., 2008; Goldfinger, Arniella, Wylie-Rosett, & Horowitz, 2008; Kanders et al., 1994; Karanja, Stevens, Hollis, & Kumanyika, 2002; Kennedy et al., 2005; Kumanyika & Charleston, 1992; Kumanyika et al., 2005; Kumanyika et al., 2009; McNabb, Quinn, Kerver, Cook, & Karrison, 1997; Samuel-Hodge et al., 2013). Another six studies used the Diabetes Prevention Program, a successful lifestyle modification program used to prevent development of type 2 diabetes mellitus, as providing a guide for their interventions (Befort et al., 2008; Cox et al., 2013; Dodani & Fields, 2010; Kumanyika et al., 2012; Kumanyika et al., 2009; Mayer-Davis et al., 2001; Mayer-Davis et al., 2004). While the Diabetes Prevention Program Research Group (2002) does not name any specific behavioral theory as framing their interventions, it employs a combination of strategies consistent with Social Cognitive Theory, the Transtheoretical Model, and the Theory of Planned Behavior (Baker, Simpson, Lloyd, Bauman, & Singh, 2011).

Of the remaining articles, nine framed their interventions with Social Cognitive Theory, alone or in combination with other behavioral change theories (Davis Martin et al., 2006; Djuric et al., 2009; Fitzgibbon, Stolley, Ganschow, et al., 2005; Fitzgibbon, Stolley, Schiffer, et al., 2005; Fitzgibbon et al., 2010; Kim et al., 2008; Stolley et al., 2009; Walcott-McQuigg et al., 2002; Wilcox, Sharpe, Parra-Medina, Granner, & Hutto, 2011). Three studies tailored weight loss interventions using the Transtheoretical Model (Auslander, Haire-Joshu, Houston, Rhee, & Williams, 2002; Djuric et al., 2009; Sbrocco, Osborn, Clark, Hsiao, & Carter, 2012). Davis Martin and colleagues (2006), used Social Cognitive Theory to customize a physician- facilitated weight loss program. One program, the WORD (wholeness, one- ness, righteousness, deliverance), used the Transtheoretical Model, Social Cognitive Theory, and the Social Support Model to ground their faith-based weight loss program (Kim et al., 2008). Cowart et al. (2010) described the use of the Information-Motivation-Behavioral Skills Model, which can be

explained as a way to think about complex health behaviors and adherence (Hotz, Kaptein, Pruitt, Sanchez Sosa, & Willey, 2003) to support their com- munity-based participatory research weight loss program. Social Action Theory framed Agurs-Collins, Kumanyika, Ten Have, and Adams-Campbell's (1997) study, which evaluated a weight loss intervention as a means of controlling diabetes in older African Americans.

**Settings.** Refer to Table 2. Most of the articles in this scoping review described studies conducted in or near large cities in the Midwest or Northeast. Several studies were conducted in the South, including North or South Carolina; Washington, D.C.; Louisiana; and Georgia; and Arkansas. Considering the size of the United States, and the regional differences and diversity across the country, settings are limited.

Fifteen of the 28 articles did not explicitly report whether their setting was urban or rural, although the assumption might be made that those articles listing a large city as the geographic location describe research taking place in urban areas (Ard et al., 2008; Befort et al., 2008; Cox et al., 2013; Djuric et al., 2009; Fitzgibbon, Stolley, Schiffer, et al., 2005; Fitzgibbon et al., 2010; Kanders et al., 1994; Karanja et al., 2002; Kumanyika et al., 2012; Kumanyika et al., 2009; Samuel-Hodge et al., 2013; Sbrocco et al., 2012; Stolley et al., 2009; Walcott-McQuigg et al., 2002; Wilcox et al., 2011). Only four reports described studies taking place in rural areas (Kennedy et al., 2005; Kim et al., 2008; Mayer-Davis et al., 2001; Mayer-Davis et al., 2004) and the remaining 10, urban or semi-urban areas (Agurs-Collins et al., 1997; Auslander et al., 2002; Cowart et al., 2010; Davis Martin et al., 2006; Dodani & Fields, 2010; Fitzgibbon, Stolley, Ganschow, et al., 2005; Goldfinger et al., 2008; Kumanyika & Charleston, 1992; Kumanyika et al., 2005; McNabb et al., 1997). The selected articles in this review described four intervention set- tings: churches, health care facilities, community centers, or academic facilities.

**Study design.** Refer to Table 3. Fifteen of the included studies were identified as randomized control trials (Agurs-Collins et al., 1997; Auslander et al., 2002; Befort et al., 2008; Cox et al., 2013; Davis Martin et al., 2006; Djuric et al., 2009; Fitzgibbon, Stolley, Ganschow, et al., 2005; Fitzgibbon, Stolley, Schiffer, et al., 2005; Fitzgibbon et al., 2010; Kumanyika et al., 2012; Mayer-Davis et al., 2004; McNabb et al., 1997; Samuel-Hodge et al., 2013; Stolley et al., 2009; Wilcox et al., 2011). In 11 articles, research studies were designated as pilot or feasibility studies and several did not use control groups preventing drawing of causal inferences (Cowart et al., 2010; Cox et al., 2013; Djuric et al., 2009; Dodani & Fields, 2010; Fitzgibbon, Stolley, Ganschow, et al., 2005; Fitzgibbon, Stolley, Ganschow, et al., 2005; Fitzgibbon, Stolley, Schiffer, et al., 2005; Goldfinger et al., 2008; Kanders et al., 1994; Kennedy et al., 2005; Mayer-Davis et al., 2001).

**Target knowledge, attitude, skills, and behaviors.** Refer to Tables 4 through 7. Weight status and weight loss behaviors are determined by a complex interaction of knowledge, attitude, and skills that must be addressed simultaneously to change behavior and include constructs under the domains of dietary and physical activity behaviors, self-monitoring, cognitive and psychosocial coping skills, and knowledge (NHLBI, 2013). The majority of the articles included in this review addressed multiple constructs within each domain through different intervention strategies. As a narrative synthesis would be a cumbersome means of describing how each manuscript addresses each domain, the information is presented in a tabular format. It is important to note that within the study sample, behaviors, skills, and knowledge are described in varying levels of detail, making it difficult to collate and summarize the information.

**Intervention strategies.** Refer to Table 8. The complex interaction of knowledge, attitudes, and skills determines that health behaviors are mediated by context, which can be

addressed by intervention strategies developed to facilitate change. As with the target knowledge, skills, attitudes, and behaviors in Tables 4 through 7, the included studies described a complex combination of intervention strategies, presented in Table 8. The level of detail describing intervention strategies varied widely among the included articles, making it difficult to extract and collate data. It has been suggested that strategies should be individual, problem and context based (Glanz & Bishop, 2010). Intervention strategies used within the included articles were one-on-one counseling and education, group counseling and education, group physical activity, faith or spirituality approaches, use of ethnically congruent facilitator or interventions, and peer or lay educators and mentors.

***Outcome variables.*** Refer to Table 9. All but one included article (Cowart et al., 2010) identified weight loss as a desired outcome of their intervention, while five indicated weight loss maintenance as a variable of interest. Other frequently identified outcome variables included risk reduction and change in diet and physical activity behavior, and attendance, adherence, and attrition rates. Change in knowledge, attitudes, quality of life, spirituality, and satisfaction with the interventions were considered relevant in several articles, but not many.

**Discussion**

The studies included in this scoping review are diverse and inconsistent in their use of behavioral change theories, methods, and intervention strategies. In addition, many of the studies lacked detail in explaining application of theory, methods, or implementation of interventions, which hinders aggregate evaluation of the selected studies.

There was varying use or explication of theory grounding the selected studies. Few of the studies included detailed application of a framework and how interventions and strategies were related to theoretical constructs. As the use of theory to guide interventions provides a guide or

blueprint for development and evaluation of methods, the lack of a theoretical framework or minimal explanation of how theory was used precludes a full understanding of the intervention. This prevents reliable evaluation and replication of methods and outcomes (Glanz & Bishop, 2010)

Ten of the studies included in this review based their intervention on the Diabetes Prevention Program, an intensive 12-month lifestyle intervention program that uses a stringent curriculum to effect long-term change in diet, physical activity, and self-monitoring behaviors to prevent the development of type 2 diabetes mellitus (Diabetes Prevention Program Research Group, 2002). The program has reported statistically significant success across a diverse sample population after 5 years, with a mean weight loss of 4% and a 58% reduction in development of type 2 diabetes mellitus when compared with the placebo group (Ratner & Diabetes Prevention Program Research Group, 2006). Baker et al. (2011) stated the Diabetes Prevention Program is based on a combination of Social Cognitive Theory, Transtheoretical Model, and Theory of Planned Behavior; however, the theoretical framework is not explicitly detailed in the literature, which may impede translation and effective modification of the Diabetes Prevention Program. Studies included in this scoping review that based their interventions on the Diabetes Prevention Program did not clearly describe how the program was implemented in their own interventions.

As much of the published research was not framed by theory, its useful- ness in the development of future weight loss interventions for OWO AAF is limited, as the research lacks justification for interventions, strategies, and identified outcomes. These findings of this study reveal a gap in the research related to the use of theoretical frameworks to guide development of behavioral weight loss interventions.

In health behavior research and health promotion, it is important to con- sider the settings or environment in which interventions are presented. Ease of access, familiarity, and comfort of settings, as well as the surrounding neighborhood, may act as facilitators or barriers to participants. In addition, the geographic location and environment are important determinants of context and affect development of effective interventions (Glanz & Bishop, 2010). To maximize generalizability and acceptability, behavioral weight loss interventions need to be studied in a wide variety of identified geographic and environ- mental settings that allow researchers and interventionists to develop and assess weight loss programs for various groups. While the Midwestern, Northeastern, and Southern regions of the United States are represented in the sample studies, the representations are sparse and mostly limited to large metropolitan areas. Furthermore, most of the identified studies are single site, single cohort studies, lacking replication and confirmation of findings.

All the selected articles include interventions that address changing behavior by addressing multiple determinants, including diet and physical activity behaviors, self-monitoring, cognitive and psychosocial coping skills, and knowledge through a variety of strategies. Very few studies included cultural relevance as a critical construct. Resnicow, Baranowski, Ahluwalia, and Braithwaite (1999) and Kreuter et al. (2003) suggested cultural adaptation or tailoring of interventions should be based on a deep understanding of the core cultural beliefs of the target population. However, few described how culturally relevant strategies were developed, leading to a lack of clarity and inability to assess application of the culturally adapted intervention.

Quality assessment of the included articles is outside the scope of this review. However, a cursory review of study designs reveals a large number of pilot studies and small sample populations, along with limited descriptions of methods and strategies, making it difficult to

appraise reports of intervention effectiveness. Research into behavioral weight loss interventions for OWO AAF needs to be theory-based, with sufficiently large sample sizes and detailed descriptions of theoretical methods, interventions, and intervention strategies.

Theoretically guided research addressing the weight management needs of overweight and obese AAF is currently sparse. To successfully develop and implement weight management programs in heterogeneous populations of OWO AAF, interventions require a deep understanding of individual, cultural, socioeconomic, and environmental determinants of behavior. Future studies are needed that detail the complex interaction of individual, cultural, socioeconomic, and environmental determinants of weight-related behaviors. The Integrated Behavioral Model, a discerning combination of constructs from effective behavior change models and theories, may provide a theoretical framework for such studies (Fishbein & Cappella, 2006).

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**Figure 1.** Summary of Article Selection Process

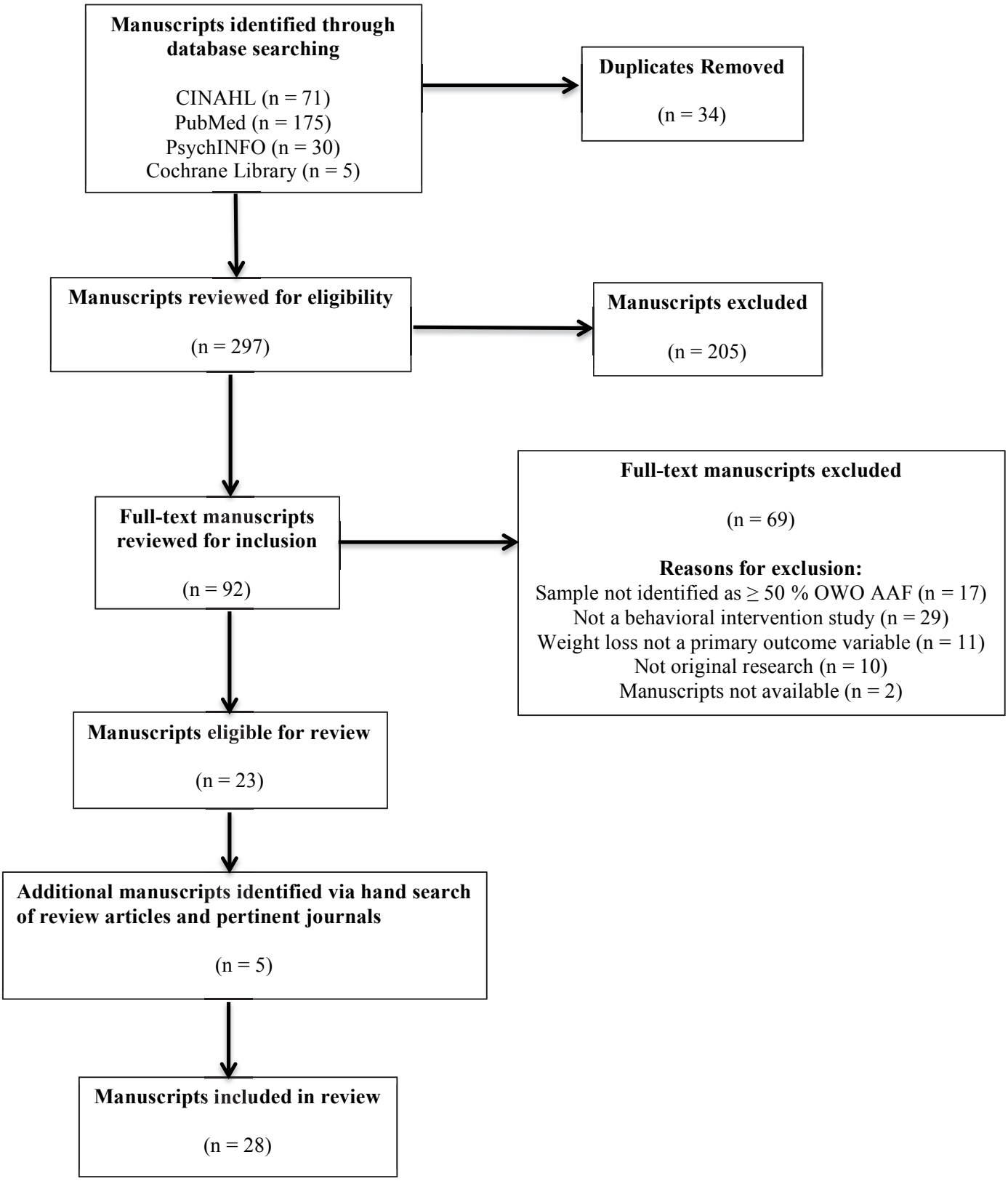

**Table 1.** Theoretical Framework.

| First Author | Diabetes Prevention Plan | Information-Motivation-Behavioral Skills | Relapse Prevention | Social Action Theory | Social Cognitive Theory | Social Support Model | Transtheoretical Model | Not reported or specified |
|---|---|---|---|---|---|---|---|---|
| Agurs-Collins | | | | ✔ | | | | |
| Ard | | | | | | | | ✔ |
| Auslander | | | | | | | ✔ | |
| Befort | ✔ | | | | | | | |
| Cowart | | ✔ | | | | | | |
| Cox | ✔ | | | | | | | |
| Davis Martin | | | | | ✔ | | | |
| Djuric | | | | | ✔ | | ✔ | |
| Dodani | ✔ | | | | | | | |
| Fitzgibbon (2005)[a] | | | | | ✔ | | | |
| Fitzgibbon (2005)[b] | | | | | ✔ | | | |
| Fitzgibbon (2010) | | | | | ✔ | | | |
| Goldfinger | | | | | | | | ✔ |
| Kand | | | | | | | | ✔ |
| Karanja | | | | | | | | ✔ |
| Kennedy | | | | | | | | ✔ |
| Kim | | | | | ✔ | ✔ | ✔ | |
| Kumanyika (1992) | | | | | | | | ✔ |
| Kumanyika (2005) | | | | | | | | ✔ |
| Kumanyika (2009) | ✔ | | | | | ✔ | | |
| Kumanyika (2012) | ✔ | | | | | | | |
| Mayer-Davis (2001) | ✔ | | | | | | | |
| Mayer-Davis (2004) | ✔ | | | | | | | |
| McNabb | | | | | | | | ✔ |
| Samuel-Hodge | | | | | | | | ✔ |
| Sbrocco | | | | | | | ✔ | |
| Stolley | | | | | ✔ | | | |
| Walcott-McQuigg | | | | | ✔ | | | |
| Wilcox | | | ✔ | | ✔ | ✔ | | |

[a]Fitzgibbon, Stolley, Gasnschow, et al., 2005.
[b]Fitzgibbon, Stolley, Schiffer, et al., 2005.

**Table 2.** Settings for Research Studies.

| First Author | Study Location | rural (R) or urban (U) | church | HCF (hospital, PCP, HD) | community center | setting not specified |
|---|---|---|---|---|---|---|
| Agurs-Collins | Washington, DC | U | | ✔ | | |
| Ard | Baltimore, Durham, Baton Rouge | | | ✔ | | |
| Auslander | "Midwest" | U | | | | ✔ |
| Befort | Kansas City, MO | | | | | ✔ |
| Cowart | Syracuse, NY | U | ✔ | | | |
| Cox | ? Arkansas | | | | | ✔ |
| Davis Martin | Louisiana | U | | ✔ | | |
| Djuric | Detroit | | | | | [c] |
| Dodani | Evans County, GA | SU | ✔ | | | |
| Fitzgibbon 2005[a] | Chicago area | U | | ✔ | | |
| Fitzgibbon 2005[b] | Chicago | | | ✔ | ✔ | |
| Fitzgibbon 2010 | Chicago | | | ✔ | | |
| Goldfinger | Harlem | U | ✔ | | | |
| Kanders | Boston, Los Angeles, Houston, New York | | | | | ✔ |
| Karanja | | | | | | ✔ |
| Kennedy | Louisiana | R | ✔ | | | |
| Kim | NC | R | ✔ | | | |
| Kumanyika (1992) | Baltimore | U | ✔ | | | |
| Kumanyika (2005) | | U | | ✔ | | |
| Kumanyika (2009) | Philadelphia area | | | | | ✔ |
| Kumanyika (2012) | Philadelphia | | | ✔ | | |
| Mayer-Davis (2001) | South Carolina | R | | ✔ | | |
| Mayer-Davis (2004) | South Carolina | R | | ✔ | | |
| McNabb | | U | ✔ | | | |
| Samuel-Hodge | North Carolina | | | ✔ | | |
| Sbrocco | Washington, DC | | ✔ | ✔ | | |
| Stolley | Chicago, IL | | | ✔ | | |
| Walcott-McQuigg | | | | ✔ | | |
| Wilcox | Columbia, SC | | | | | ✔ |

Note. HCP = Health Care Provider; PCP = Primary Care Provider; HD = Health Department.
[a]Fitzgibbon, Stolley, Gasnschow, et al., 2005.
[b]Fitzgibbon, Stolley, Schiffer, et al., 2005.
[c]"Study Office."

**Table 3.** Study Design.

| First Author | RCT | Pilot/Feasibility | Pretest-Posttest | Single Group | Interrupted Time Series | Delayed Cohorts | Nonequivalent Groups | Mult Arms | CBPR | Qualitative | Participant Not Randomization Unit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Agurs-Collins | ✔ | | | | | | | | | | |
| Ard | | | ✔ | | | | ✔ | | | | |
| Auslander | ✔ | | | | | | | | | | |
| Befort | ✔ | | | | | | | | | | |
| Cowart | | ✔ | | ✔ | | | | | ✔ | ✔ | |
| Cox | ✔ | ✔ | | | | | | | | | |
| Davis Martin | ✔ | | | | | | | | | | ✔ |
| Djuric | ✔ | ✔ | | | | | | | | | |
| Dodani | | ✔ | ✔ | ✔ | | | | | ✔ | | |
| Fitzgibbon (2005)[a] | [c] | ✔ | | | | | | | | | |
| Fitzgibbon (2005)[b] | ✔ | ✔ | | | | ✔ | | | | | |
| Fitzgibbon (2010) | ✔ | | | | | | | | | | |
| Goldfinger | | ✔ | ✔ | ✔ | | | | | ✔ | | |
| Kanders | | ✔ | ✔ | ✔ | | | | | | | |
| Karanja | | | ✔ | ✔ | | | | | | | |
| Kennedy | | ✔ | ✔ | | | | ✔ | | | | |
| Kim | | | ✔ | | | | | | ✔ | | ✔ |
| Kumanyika (1992) | | | ✔ | [d] | | | | | | | |
| Kumanyika (2005) | | | | | ✔ | | ✔ | ✔ | | | |
| Kumanyika (2009) | | | | | ✔ | | ✔ | | | | |
| Kumanyika (2012) | ✔ | | | | | | | | | | |
| Mayer-Davis (2001) | | ✔ | ✔ | | | | ✔ | | | | |
| Mayer-Davis (2004) | ✔ | | | | | | | ✔ | | | |
| McNabb | ✔ | | | | | | | | | | |
| Samuel-Hodge | ✔ | | | | | | | | | | |
| Sbrocco | | | ✔ | | | | ✔ | | | | |
| Stolley | ✔ | | | | | | | | | | |
| Walcott-McQuigg | | | ✔ | ✔ | | | | | | | |
| Wilcox | ✔ | | | | | | | | | | |

Note. RCT = Randomized Control Trial; CBPR = Community-based Participatory Research.
[a]Fitzgibbon, Stolley, Gasnschow, et al., 2005.
[b]Fitzgibbon, Stolley, Schiffer, et al., 2005.
[c]Pilot, RCT but also reports as nonequivalent groups.
[d]Intervention provided at multiple sites, but results aggregated.

**Table 4.** Target Knowledge & Skills

| | Health Risks/Benefits | Label Reading | Portions/Portion Control | Grocery Shopping | Recipe Modification | Eating Out | General Nutrition | Cooking Techniques/Meal Prep | Physical Activity | Counting Fat/Carbs/Calories | Ideal Body Weight | Lifestyle Changes | Other | Non-Specified |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Agurs-Collins | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | | | | | |
| Ard | | | ✔ | | ✔ | | ✔ | | | | | | | |
| Auslander | | ✔ | ✔ | ✔ | ✔ | ✔ | | | | ✔ | | | | |
| Befort | | | | | ✔ | | ✔ | | ✔ | | | | | |
| Cowart | | ✔ | | | ✔ | | ✔ | | ✔ | | | | | |
| Cox | ✔ | ✔ | | ✔ | ✔ | ✔ | ✔ | | ✔ | | | ✔ | | ✔ |
| Davis Martin | ✔ | ✔ | | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | | | | | |
| Djuric | | | | | | | | | | | | | | [c] |
| Dodani | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | | ✔ | | |
| Fitzgibbon (2005)[a] | ✔ | ✔ | | | ✔ | | | | ✔ | | | | | |
| Fitzgibbon (2005)[b] | ✔ | ✔ | ✔ | | | | ✔ | | ✔ | | | ✔ | | |
| Fitzgibbon (2010) | | ✔ | ✔ | | ✔ | ✔ | | ✔ | ✔ | | | | | |
| Goldfinger | | | ✔ | ✔ | | ✔ | ✔ | ✔ | ✔ | | | | | |
| Kanders | | | | | | | | ✔ | ✔ | | | | | |
| Karanja | | | | ✔ | ✔ | ✔ | | | ✔ | ✔ | | | | |
| Kennedy | ✔ | | | ✔ | | | ✔ | | ✔ | ✔ | ✔ | | | |
| Kim | | | ✔ | | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | | | | |
| Kumanyika (1992) | | | | | | | | | | | | | | |
| Kumanyika (2005) | ✔ | ✔ | ✔ | ✔ | ✔ | ✔ | | ✔ | | | | | | |
| Kumanyika (2009) | | | | | | | | ✔ | ✔ | | | | | |
| Kumanyika (2012) | ✔ | | | ✔ | | | ✔ | | ✔ | ✔ | | | | |
| Mayer-Davis (2001) | | | | | | | ✔ | | ✔ | ✔ | | | | |
| Mayer-Davis (2004) | | | | ✔ | ✔ | | ✔ | | ✔ | | | | | |
| McNabb | ✔ | | | | | | | | | ✔ | | | | |
| Samuel-Hodge | | | | | | | ✔ | | ✔ | | | | | |
| Sbrocco | | | | | | | | | | | | | | ✔ |
| Stolley | ✔ | | ✔ | ✔ | ✔ | | | ✔ | ✔ | | | | | |
| Walcott-McQuigg | | | | | | | ✔ | | ✔ | | | | | ✔ |
| Wilcox | | ✔ | | ✔ | ✔ | ✔ | | ✔ | ✔ | | | | | |

[a]Fitzgibbon, Stolley, Gasnschow, et al., 2005.
[b]Fitzgibbon, Stolley, Schiffer, et al., 2005.
[c]"Standard weight loss counseling," not otherwise specified

**Table 5.** Target Diet Behaviors.

| | Rx % Carbs, Proteins, Fats | DASH | Calorie Restriction\Rx | F&V | Fiber/Grains | Fats | Sugars/Sugary Drinks | Portion Control | Reduce Calorie Intake | Based On Food Pyramid/Plate | Individualized Recommendations | Meal Replacement | Exchange List | "Healthy Heating" | Other | Not Specified |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Agurs-Collins | ✔ | | | | | ✔ | | | ✔ | | ✔ | | ✔ | | | |
| Ard | | ✔ | ✔ | ✔ | ✔ | ✔ | | ✔ | | | | | | ✔ | | |
| Auslander | | | | ✔ | ✔ | ✔ | | | | | | | | ✔ | | |
| Befort | [c] | | | ✔ | | | | | ✔ | | | | | | | |
| Cowart | | | | ✔ | ✔ | | ✔ | | | ✔ | | | | | | |
| Cox | ✔ | | ✔ | ✔ | | | | | | | | | | | | |
| Davis Martin | | | | ✔ | | ✔ | | | | | ✔ | | | | | |
| Djuric | ✔ | | | ✔ | ✔ | ✔ | | | ✔ | | | | [d] | | | |
| Dodani | | | | | | ✔ | | ✔ | ✔ | ✔ | | | | ✔ | | |
| Fitzgibbon (2005)[a] | | | | ✔ | | ✔ | | ✔ | | | | | | | | |
| Fitzgibbon (2005)[b] | | | | ✔ | | ✔ | | ✔ | ✔ | | | | | | | |
| Fitzgibbon (2010) | | | | ✔ | ✔ | ✔ | | ✔ | ✔ | | | | | | | |
| Goldfinger | | | | ✔ | | ✔ | ✔ | ✔ | | | | | | ✔ | | |
| Karanja | [c] | | | | | | | | | | | | | | | |
| Kanders | | | ✔ | | | ✔ | | | | | ✔ | | | | | |
| Kennedy | | | | ✔ | ✔ | ✔ | | | ✔ | | | | | | | ✔ |
| Kim | | | | | | | | | | | | | | ✔ | | |
| Kumanyika (1992) | | | | | | ✔ | | | ✔ | | | | | | | |
| Kumanyika (2005) | | | | | | | | | ✔ | ✔ | | | | ✔ | [e] | |
| Kumanyika (2009) | | | ✔ | | | | | | | | | | | | | |
| Kumanyika (2012) | | | | | | | | | | | ✔ | | | | | |
| Mayer-Davis (2001) | | | ✔ | | | ✔ | | | | | | | | | | |
| Mayer-Davis (2004) | [c] | | ✔ | | | | | | | | | | | | | |
| McNabb | | | | | ✔ | ✔ | | | | | | | | | | |
| Samuel-Hodge | | | ✔ | | | ✔ | | | | | | | | | | |
| Sbrocco | | | ✔ | ✔ | | | | | | | | | | | | |
| Stolley | | | | ✔ | ✔ | ✔ | | | | | | | | | | |
| Walcott-McQuigg | | | ✔ | | | | | | | | ✔ | | | | | |
| Wilcox | | ✔ | ✔ | ✔ | | ✔ | | | | | ✔ | | | | | |

Note. Rx = Prescribed; DASH = Dietary Approaches to Stop Hypertension; F&V = fruits and vegetables
[a]Fitzgibbon, Stolley, Gasnschow, et al., 2005.
[b]Fitzgibbon, Stolley, Schiffer, et al., 2005.
[c]% fats
[d]Participants provided with Weight Watchers Vouchers
[e]Described as non-prescriptive.

**Table 6.** Target Physical Activity Behaviors

| First Author | Increase PA | Rx Min/Week | Individualized | Decrease Sedentary Behavior | Increase Leisure Activity/ Lifestyle Activities | Rx Min Per Day X Days Per Week | 10,0000 Steps/Day | Moderate PA | Walking | Not Specified |
|---|---|---|---|---|---|---|---|---|---|---|
| Agurs-Collins | ✔ | | | | | ✔ | | | | |
| Ard | | ✔ | | | | | | ✔ | | |
| Auslander | | | | | | | | | | ✔ |
| Befort | | ✔ | | | | | | | | |
| Cowart | [c] | | | | | | | | | |
| Cox | | ✔ | | | | | | ✔ | | |
| Davis Martin | | | ✔ | | | | | | | ✔ |
| Djuric | | | | | | ✔ | ✔ | | | |
| Dodani | | ✔ | | | ✔ | | | | | |
| Fitzgibbon (2005)[a] | ✔ | | | | ✔ | | | | | |
| Fitzgibbon (2005)[b] | ✔ | | | | ✔ | | | | | |
| Fitzgibbon (2010) | ✔ | | | | | ✔ | ✔ | | | |
| Goldfinger | ✔ | | | ✔ | | | | | | |
| Kanders | | ✔ | | | | | | | | |
| Karanja | | | | | | ✔ | | | | |
| Kennedy | ✔ | | | | | | | | | |
| Kim | ✔ | | | ✔ | | | | | | |
| Kumanyika (1992) | [d] | | | | | | | | | |
| Kumanyika (2005) | | | ✔ | | | | | | | |
| Kumanyika (2009) | | ✔ | | | | | | | | |
| Kumanyika (2012) | | ✔ | | | | | | | | |
| Mayer-Davis (2001) | | | | | | | | ✔ | | |
| Mayer-Davis (2004) | | ✔ | [e] | | | | | ✔ | | |
| McNabb | | | | | | | | | ✔ | |
| Samuel-Hodge | | ✔ | | | | | | ✔ | | |
| Sbrocco | | | | | | ✔ | | | | |
| Stolley | | | | | | ✔ | | ✔ | | |
| Walcott-McQuigg | | | | | | ✔ | | | | |
| Wilcox | | | | | | ✔ | | | | |

Note. PA = Physical Activity; Rx = Prescribed.
[a]Fitzgibbon, Stolley, Gasnschow, et al., 2005.
[b]Fitzgibbon, Stolley, Schiffer, et al., 2005.
[c]Described as non-prescriptive
[d]Encouraged and based physical condition
[e]Encouraged 3 times/week

**Table 7.** Target Knowledge & Skills

| | Problem Solving/ Overcoming Barriers | Goal Setting | Self Monitoring Diet/PA | Action Plan | Stress Reduction/Relaxation Techniques | Developing Coping Skills | Social Support | Trigger/Stimulus Control | Self-Efficacy | Positive Self Talk or Thinking | Self Reflection /Awareness | Spirituality | Relapse Prevention |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Agurs-Collins | ✔ | ✔ | ✔ | | | | ✔ | ✔ | | | | | ✔ |
| Ard | ✔ | | | ✔ | | ✔ | | | | | | | |
| Auslander | ✔ | | | | | ✔ | | | | | | | |
| Befort | ✔ | ✔ | ✔ | | | | ✔ | ✔ | ✔ | | | | ✔ |
| Cowart | ✔ | ✔ | | | | | ✔ | | | | | ✔ | |
| Cox | ✔ | ✔ | ✔ | | ✔ | | | | | ✔ | | | |
| Davis Martin | ✔ | ✔ | | | | | ✔ | ✔ | ✔ | | ✔ | | |
| Djuric | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | ✔ | ✔ |
| Dodani | ✔ | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | ✔ |
| Fitzgibbon 2005a | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | | | | ✔ | |
| Fitzgibbon 2005b | ✔ | ✔ | ✔ | | | ✔ | ✔ | ✔ | | | ✔ | | ✔ |
| Fitzgibbon 2010 | ✔ | ✔ | ✔ | | | | ✔ | ✔ | ✔ | | | | |
| Goldfinger | ✔ | | | ✔ | | | ✔ | | | | | | |
| Kanders (Ashley) | ✔ | ✔ | ✔ | | | | ✔ | | | | | | |
| Karanja | ✔ | ✔ | ✔ | ✔ | | | ✔ | | | | | ✔ | |
| Kennedy | ✔ | ✔ | ✔ | ✔ | ✔ | | ✔ | | | | ✔ | | ✔ |
| Kim | ✔ | ✔ | | | | | ✔ | | | | | ✔ | |
| Kumanyika 1992 | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | ✔ | | | ✔ | | ✔ |
| Kumanyika 2005 | ✔ | ✔ | ✔ | | | | | | | | ✔ | | |
| Kumanyika 2009 | ✔ | ✔ | | | | ✔ | ✔ | | | | | | |
| Kumanyika 2012 | ✔ | ✔ | ✔ | | ✔ | | ✔ | | | | | | ✔ |
| Mayer-Davis 2001 | ✔ | ✔ | ✔ | | | | | | | | | | |
| Mayer-Davis 2004 | ✔ | ✔ | ✔ | | | | | | | | | | |
| McNabb | ✔ | ✔ | ✔ | | | | | | | | ✔ | ✔ | |
| Samuel-Hodge | ✔ | ✔ | ✔ | ✔ | | | | | | | | | |
| Sbrocco | ✔ | | ✔ | | | | | | | | ✔ | | ✔ |
| Stolley | ✔ | ✔ | ✔ | | | | ✔ | ✔ | | | | | |
| Walcott-McQuigg | ✔ | ✔ | ✔ | | | | | | | | ✔ | | ✔ |
| Wilcox | ✔ | ✔ | ✔ | ✔ | ✔ | | ✔ | | | | | | |

**Table 8.** Intervention Strategies

| First Author | 1:1 education or MI | group education | group PA | HCP | ethical congruence of interventionists | culturally relevant appropriate | lay/peer educators | faith based | maintenance intervention | some telephone contact |
|---|---|---|---|---|---|---|---|---|---|---|
| Agurs-Collins | ✔ | ✔ | ✔ | | ✔ | ✔ | | | | |
| Ard | | ✔ | | | ✔ | ✔ | | | ✔ | |
| Auslander | ✔ | ✔ | | | | ✔ | ✔ | | | |
| Befort | ✔ | ✔ | | | | ✔ | ✔ | | | ✔ |
| Cowart | | ✔ | ✔ | | | ✔ | ✔ | ✔ | | |
| Cox | ✔ | ✔ | | | ✔ | ✔ | | | | |
| Davis Martin | ✔ | | | ✔ | | ✔ | | | | |
| Djuric | ✔ | | | | | ✔ | | ✔ | | ✔ |
| Dodani [a] | ✔ | ✔ | | | ✔ | ✔ | ✔ | ✔ | | |
| Fitzgibbon (2005)[b] | | ✔ | ✔ | | | ✔ | | ✔ | | |
| Fitzgibbon (2005)[c] | | ✔ | ✔ | | | ✔ | | | | |
| Fitzgibbon (2010) | ✔ | ✔ | | | [d] | | ✔ | | | |
| Goldfinger | | ✔ | ✔ | | | ✔ | ✔ | | | |
| Kanders | | ✔ | | | ✔ | ✔ | | | | |
| Karanja | | ✔ | ✔ | | ✔ | ✔ | | | | |
| Kennedy | ✔ | ✔ | | | ✔ | ✔ | ✔ | | | |
| Kim | | | ✔ | | ✔ | ✔ | ✔ | ✔ | | |
| Kumanyika (1992) | | ✔ | ✔ | | | ✔ | ✔ | | ✔ | |
| Kumanyika (2005) | | ✔ | ✔ | | [b] | ✔ | ✔ | | | |
| Kumanyika (2009) | ✔ | ✔ | ✔ | | ✔ | ✔ | ✔ | | | |
| Kumanyika (2012) | ✔ | | | ✔[e] | | ✔ | | | ✔ | |
| Mayer-Davis (2001) | ✔ | ✔ | ✔ | | | ✔ | | | | |
| Mayer-Davis (2004) | ✔ | ✔ | | | | ✔ | | | | |
| McNabb | | ✔ | | | ✔ | ✔ | ✔ | ✔ | | |
| Samuel-Hodge | | ✔ | | | | ✔ | | | | |
| Sbrocco | | ✔ | | | | ✔ | | | | |
| Stolley | ✔ | ✔ | ✔ | | | ✔ | | ✔ | | |
| Walcott-McQuigg | ✔ | ✔ | | | ✔ | ✔ | | | | |
| Wilcox | ✔ | ✔ | ✔[f] | | | ✔ | | | | |

Note: MI = Motivational Interviewing; HCP = Health Care Provider.
[a]Study described in Dodani et al., 2009
[b]Fitzgibbon, Stolley, Gasnschow, et al., 2005.
[c]Fitzgibbon, Stolley, Schiffer, et al., 2005.
[d]"some"
[e]PCP and lifestyle coach
[f]Included 1:1 PA counseling

**Table 9.** Outcome Variables

| First Author | Wt/BMI/Anthropomorphics | Wt Loss Maintenance | Serum Markers | BP | Measured Physical Fitness | Diet Or PA Behavior | Attendance/Adherence/ Attrition | Knowledge | Attitides | QOL/Perceived Health | Satisfaction With Program | Stress | Self Efficacy | Spirituality | Feasibility/Cost |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Agurs-Collins | ✔ | | ✔ | ✔ | | ✔ | ✔ | ✔ | | | | | | | ✔ |
| Ard | ✔ | ✔ | | | | ✔ | ✔ | | | | | | | | |
| Auslander | ✔ | | | | | | | ✔ | ✔ | | | | | | |
| Befort | ✔ | | | | | ✔ | ✔ | | | | ✔ | | ✔ | | |
| Cowart | | | | | | ✔ | | | ✔ | | | | | | ✔ |
| Cox | ✔ | | | | | | ✔ | | | | ✔ | ✔ | | | |
| Davis Martin | ✔ | | | | | | | | | | | | | | |
| Djuric | ✔ | ✔ | | | | ✔ | ✔ | | | | | | | ✔ | |
| Dodani | ✔ | | | | | ✔ | | | | | | | | | ✔ |
| Fitzgibbon (2005)[a] | ✔ | | | | | ✔ | ✔ | | | | | | | | |
| Fitzgibbon (2005)[b] | ✔ | | | | | ✔ | | | | | | | | | |
| Fitzgibbon (2010) | ✔ | ✔ | | | | ✔ | ✔ | | | | | | | | |
| Goldfinger | ✔ | | | | | ✔ | | ✔ | | ✔ | | | | | |
| Kanders (Ashley) | ✔ | | | | | | ✔ | | | | | | | | |
| Karanja | ✔ | | | | | ✔ | ✔ | | | | | | | | |
| Kennedy | ✔ | | ✔ | ✔ | | | | | | | | | | | |
| Kim | ✔ | | | | | ✔ | | | | | | | | | |
| Kumanyika (1992) | ✔ | ✔ | | | | | ✔ | | | | | | | | |
| Kumanyika (2005) | ✔ | ✔ | ✔ | ✔ | | | | | | | | | | | ✔ |
| Kumanyika (2009) | ✔ | | | | | | | | | | | | | | |
| Kumanyika (2012) | ✔ | | | | | | ✔ | | | ✔ | | | | | |
| Mayer-Davis (2001) | ✔ | | ✔ | | | | | | | | | | | | |
| Mayer-Davis (2004) | ✔ | | ✔ | ✔ | | | | | | | | | | | |
| McNabb | ✔ | | | | | ✔ | | | | | | | | | |
| Samuel-Hodge | ✔ | | | | | ✔ | ✔ | | | ✔ | | | | | ✔ |
| Sbrocco | ✔ | | | | ✔ | | | | | | | | | ✔ | |
| Stolley | ✔ | | | | | ✔ | | | | | | | | | |
| Walcott-McQuigg | ✔ | | ✔ | ✔ | | ✔ | | | | | | | | | |
| Wilcox | ✔ | | | | | | | | | | | | | | |

Note. BMI = Body Mass Index; QOL = Quality of Life.
[a]Fitzgibbon, Stolley, Gasnschow, et al., 2005.
[b]Fitzgibbon, Stolley, Schiffer, et al., 2005.

## Manuscript 3

Sutton, S., Magwood, G., Jenkins, C., Nemeth, L.S, Mueller, M., & Fitzsimmons, K. (2016). *Development and pretesting of a weight management behaviors questionnaire for overweight and obese African American females*. College of Nursing, Medical University of South Carolina.

## ABSTRACT

**Background & Purpose:** African American females (AAF) are disproportionately affected by overweight and obesity and the health and socioeconomic consequences associated with elevated body mass index. Current research and weight management interventions do not sufficiently address the needs of overweight and obese (OWO) AAF who are underrepresented as research participants. The purpose of this study is to develop and pretest a questionnaire to measure attitudes and beliefs associated with weight management behaviors in OWO AAF.

**Methods:** The Integrated Behavioral Model (IBM) was used to frame development of a scale measuring attitudes and beliefs related to weight management behaviors in three domains: diet, physical activity and self-monitoring. Dimensional analysis was used to develop items within each domain. Expert panel review and cognitive interviewing (CI) were employed to determine content validity and identify potential for response. After item reduction based on content validity and CI, the questionnaire was pilot tested to determine internal validity and temporal stability.

**Results:** A preliminary questionnaire was developed following guidelines set forth in the IBM, resulting in a 296-item survey. Following panel review to determine content validity, the number of items was reduced to 124 items. CI led to the development of a 120-item questionnaire measuring attitude and beliefs across four behavioral subscales as well as post-intention variables related to dietary, physical activity, and self-monitoring behaviors. Internal validity was supported by Cronbach's alpha of > 0.7 for each of the subscales and temporal stability was moderate.

**Conclusion:** While the internal validity of the questionnaire has been established with confidence, further testing, with more robust recruitment strategies, is needed to establish reliability and perform factor analysis.

## Development and Pretesting of a Weight Management Behaviors Questionnaire for Overweight and Obese African American Females

Overweight and obesity are complex, multifactorial health problems that result from a complicated interaction of genetic, environmental, and behavioral factors (Hruby & Hu, 2014). In the US, overweight and obesity have reached epidemic proportions and disproportionately affect vulnerable populations. AAF have an increased prevalence of overweight and obesity, with associated health and socioeconomic consequences (Hamby, 2013; National Center for Health Statistics [NCHS], 2016; Zhang & Rodriguez-Monguio, 2012). Often, weight management interventions (WMIs) have failed to meet the needs of OWO AAF (Fitzgibbon et al., 2012; Kong, Tussing-Humphreys, Odoms-Young, Stolley, & Fitzgibbon, 2014), and few studies have examined the effect of cultural and socioeconomic factors on weight management in OWO AAF (Fitzgibbon et al., 2012; Kong et al., 2014; Kumanyika, Whitt-Glover, & Haire-Joshu, 2014).

### Background

The overall prevalence of overweight and obesity has been increasing in the US since the late 1970s (NCHS, 2016). The prevalence of overweight and obesity in AAF has increased from approximately 63% to 82% over the last four to five decades, compared to an all population increase from 42% to 64% (NCHS, 2016). While the overall prevalence data are concerning, the average body mass index (BMI) for AAF is significantly higher, thus increasing their risk for negative consequences of overweight and obesity (NCHS, 2016). In addition, OWO AAF suffer an increased incidence of diseases and health problems associated with overweight and obesity (Hamby, 2013; Zhang & Rodriguez-Monguio, 2012).

Overweight and obesity are the leading risk factors for type 2 diabetes mellitus (T2DM) and are closely linked to hypertension, cardiovascular disease, stroke, osteoarthritis, and some cancers (Eheman et al., 2012; Hamby, 2013). Morbidity and disability associated with chronic illness and other diseases are increased in those with overweight and obesity (Eheman et al., 2012; Flegel, Kit, Orpana, & Graubard, 2013; Kitahara et al., 2014), and obesity is a leading cause of preventable (Bauer, Briss, Goodman, & Bowman, 2014) and early death (Greenberg, 2013). Research shows that AAF are more vulnerable than any other demographic group to the health problems of overweight and obesity and suffer in greater numbers from comorbidities such as hypertension, T2DM, coronary heart disease, and disabilities associated with overweight and obesity (Zhang & Rodriguez-Monguio, 2012).

Systematic reviews of the literature demonstrated that few studies have addressed the weight management needs of OWO AAF; moreover, existing interventions are less effective in meeting the weight management needs of OWO AAF as compared to their white counterparts, resulting in poor adherence to programs, less weight loss, and failure to maintain weight loss (Fitzgibbon et al., 2012; Kong et al., 2014). A scoping review mapped literature on the implementation of behavioral WMIs in OWO AAF, finding that the majority of included reports provided few details about theoretical framework, methods, settings, interventions, or implementation strategies (Sutton, Magwood, Jenkins & Nemeth, 2016). In addition, few studies have defined or determined the effect of cultural and socioeconomic factors on weight management in OWO AAF. Also, existing research lacks consistency of methods and measures, preventing the application of results to the development and evaluation of successful and sustained WMIs (Fitzgibbon et al., 2012; Kong et al., 2014; Kumanyika et al., 2014).

WMIs should be theoretically grounded and include informed, culturally appropriate interventions and strategies in order to meet the needs of diverse populations of OWO AAF (Agyemang & Powell-Wiley, 2013). Furthermore, the National Heart, Lung and Blood Institute ([NCLBI], 2013) and Office of Behavioral Social Sciences Research ([OBSSR], 2015) recommend careful consideration and appreciation of cultural and socioeconomic conditions to plan and implement WMIs effectively in diverse populations of OWO AAF. To improve outcomes, WMIs should target the needs of specific groups and be tailored to meet individual, cultural, and socioeconomic conditions (Fitzgibbon et al., 2012; James, 2013; Kong et al., 2014; Kumanyika et al., 2014). Few studies specified a means for identifying conditions and population needs to guide implementation, or used theoretical frameworks to guide development, implementation or evaluation of WMIs (Sutton, et al., 2016). The proposed research used the Integrated Behavioral Model (IBM) to frame development of a questionnaire to measure attitudes and beliefs related to weight management behaviors in OWO AAF.

Use of a theoretically-grounded, needs assessment focusing on individual, cultural, socioeconomic, and environmental determinants of behavior may significantly add to the knowledge base and practice by defining and categorizing strategies to adapt culturally appropriate WMIs to OWO AAF. Clearly, effective and efficient means of adapting community-based WMIs along with providing consistency in methods and measurements that allows for comparison and evaluation of interventions are needed. This study is innovative in its explicit use of the IBM to develop a theoretically grounded questionnaire that may be used to assess needs and to develop and evaluate the effectiveness of culturally appropriate WMIs in different populations and communities of OWO AAF. In addition, this study used current research to guide the development of questionnaire items, rather than elicitation through focus groups, in

order to facilitate use in diverse populations of AAF. The specific aims of this research were as follows:

**Aim 1.** Develop a questionnaire to assess attitudes, beliefs, and post-intention variables related to weight management behaviors in OWO AAF.

**Aim 2.** Determine content validity of the questionnaire through expert review and cognitive interviewing (CI).

**Aim 3.** Evaluate internal consistency, test-retest reliability, acceptability of the questionnaire, recruitment strategies, and feasibility and efficacy of data collection and analysis strategies in a pilot study.

**Overview of Methods.**

The IBM guided development of a questionnaire measuring attitudes, beliefs, and post-intention weight management behaviors of diet, physical activity, and self-monitoring. A review panel of research experts and sample participants were enlisted to determine content validity index (CVI) at scale and item levels (DeVellis, 2012; Polit, Beck, & Owen, 2007), while CI (Willis, 2005) was used to identify potential problems with survey instructions and items that may result in response error. Finally, a pilot study was conducted using an online, REDCap based survey to assess internal consistency and test-retest reliability (DeVellis, 2012), feasibility, efficacy of recruitment, data collection, and analysis strategies. Research participants for panel review, CI, and pilot testing were adult ($\geq$21 years old) OWO AAF who speak and read English. A purposive sample from South Carolina was recruited through community outreach.

**Theoretical Framework.** Theoretical frameworks provide a systematic and pragmatic means of understanding health behaviors and the context in which they occur. Most successful health promotion interventions are based in behavioral change theory (Glanz, Rimer and

Viswanath, 2015). Determinants of behavior, their interactions, and outcomes are explained through theory, providing a structure for the development of behavior change interventions and the measurement of effectiveness in health promotion. Experts agree that most behavior is determined by intention to engage derived from a complex interaction of a limited number of factors influenced by individual, socioeconomic, cultural, and environmental conditions (Fishbein et al., 1992). In addition, post-intention variables, which frequently occur in the form of environmental constraints and interpersonal barriers, may moderate engagement in the behavior. To capture and explain the most relevant factors related to behavior, theories must be flexible and adaptable to the behavior, population, and context of interest (Fishbein & Cappella, 2006; Montano & Kasprzyk, 2015; Yzer, 2012).

The IBM (see Figure 1) integrates variables from other behavioral theories, including volitional control, environmental constraints, and knowledge and skills as constructs and, thus, provides a means for assessing the impact of post-intention variables on the performance of a behavior. (Fishbein & Cappella, 2006; Montano & Kasprzyk, 2015; Yzer, 2012). Through IBM, Fishbein and Cappella (2006) have postulated that, absent inhibiting post-intention variables, individuals with intent will engage in the defined behavior. Identification of relevant attitudinal, belief, and post-intention variables can be accomplished using IBM to examine individual, cultural, socioeconomic, and environmental factors. Strategies and interventions to guide behavioral change can then be developed to encourage health-promoting behaviors (Fishbein & Cappella, 2006; Montano & Kasprzyk, 2015; Yzer, 2012).

The model also allows for tailoring of interventions and messages as determined by an intention-behavior gap (Fishbein & Cappella, 2006; Yzer, 2012). For those who intend to perform a behavior (intenders), the goal is to identify post-intention variables inhibiting

performance, such as lack of knowledge or environmental barriers, and then overcome them. For those who have no intent to perform the behavior (non-intenders), the goal is to identify and address beliefs to change attitude and intent (Yzer, 2012). This feature of IBM allows a two-level approach to behavioral change (Fishbein & Cappella, 2006) that may be implemented across populations with different beliefs but similar background variables.

**Methods**

**Overview.** This three-phase study used the IBM to guide development of a questionnaire measuring attitudes, beliefs, and post-intention variables related to weight management behaviors of diet, physical activity, and self-monitoring. In the first phase, an exhaustive list of salient items was developed based on IBM constructs, and a preliminary review was conducted by the primary investigator. Then, a panel of research experts and sample participants were enlisted to determine content validity index (CVI) at scale, subscale, and item levels (DeVellis, 2012; Polit, Beck, & Owen, 2007), while CI (Willis, 2005) was used to identify potential problems with survey instructions and items that may result in response error. Finally, a pilot study was conducted using an online, REDCap based survey to assess internal consistency and test-retest reliability (DeVellis, 2012), feasibility, efficacy of recruitment, data collection, and analysis strategies. Research participants for panel review, CI, and pilot testing were adult ($\geq$21 years old) OWO AAF who speak and read English. A purposive sample from the Upstate of South Carolina was recruited through community outreach (see Figure 2).

**Development of questionnaire.** The first step in the development of the questionnaire was the parsimonious definition of the behaviors of interest by action target, context, and time (Fishbein & Ajzen, 2010). After defining behaviors of interest, Yzer (2012) recommended performing an elicitation study through individual or focus group interviews to identify

population and context specific attitudes, beliefs, and post-intention variables for each behavior. However, elicitation studies may be time-consuming and may result in an item pool that is applicable only to the specific sample population. For the purpose of this project, items were extracted from current literature through the process of dimensional analysis. This method provided a broader population and context, allowing for a wider application of the instrument.

A dimensional analysis of the concept of weight management in the context of OWO AAF identified IBM constructs related to weight management behaviors (Sutton, Magwood, Nemeth, & Jenkins, 2016). (see Figure 3 Conceptual Model). Items were formulated to measure the strength of attitudinal, outcome, normative, and control beliefs, evaluation of outcomes, motivation to comply, and power of the control beliefs (Fishbein & Ajzen, 2010). The items to be included in the questionnaire identify those beliefs most strongly associated with intent to perform the behavior, as well as existing favorable beliefs related to the behavior (Yzer, 2012). Measurement of intention to perform and identification of existing favorable beliefs offer a means of tailoring intervention strategies to change beliefs underlying intention or to strengthen existing beliefs (Fishbein & Cappella, 2006; Montano & Kasprzyk, 2015; Yzer, 2012). Once questionnaire items were developed, they were screened by the primary investigator using the Question Appraisal System (Willis, 2005) for problems with wording or construction that may prevent understanding (See Appendix A. Unreduced Questionnaire and Appendix B. Code Book for QAS-99 and Cognitive Interview Analysis). Items identified as redundant or problematic were edited or discarded as needed.

**Instrument pretesting.**

***Panel Review and Content Validity Index (CVI).*** Content validity is defined as the extent to which the instrument and instrument items measure defined constructs (DeVellis,

2012). The CVI was measured at three levels: scale (S-CVI), subscale (SS-CVI), and item (I-CVI) (Polit et al., 2007). A review panel consisting of three research experts and four community members was enlisted to appraise the relevance of each item and to suggest additional items (Polit et al., 2007). Expert panel members were required to have research experience with OWO or AAF and were enlisted through collegial associations with the PI. Community members participating in panel review were enlisted through community outreach. (See Appendix C. Letter of Invitation & Expert Qualifications for CVI). Including review panel members with characteristics similar to the target population characteristics offers a method of validating development of items through dimensional analysis (Davis, 1992).

*Data Collection.* The panel members rated the relevance of each item on a four-point scale (1 = not relevant; 2 = somewhat relevant; 3 = quite relevant; 4 = highly relevant) and suggested additional questions if needed (DeVellis, 2012; Polit et al., 2007). A panel of seven members decreases the potential for chance agreement, while providing more accurate S-CVI, SS-CVI and I-CVI (Polit et al., 2007). The panel members were provided with a link to the internet-based survey that contained instructions for rating, definitions of the variables being measured, and potential questionnaire items. Panel members were also given an opportunity to provide qualitative suggestions to revise items for clarity (see Appendix D. Survey Used for CVI).

*Data Analysis.* The ratings were analyzed using IBM SPSS Statistics for Windows, version 24 (SPSS-24) (IBM Corp., Armonk, N.Y., USA) to calculate I-CVI, SS-CVI and S-CVI. I-CVI was calculated as the average number of panel members rating the item quite relevant (3) or highly relevant (4). Items with a I-CVI of < 0.7 were considered irrelevant and not included in the revised questionnaire. The content validity index was calculated for three subscales:

dietary behavior, physical activity, and self-monitoring by averaging the sum of I-CVIs for each subscale (SS-CVI) and for the entire scale (S-CVI). The values of the item, subscale, and scale CVIs, as well as comments by panel members, were used to refine the questionnaire.

***Cognitive Interviewing (CI).*** Cognitive interviewing is a qualitative method of pretesting questionnaire items to identify potential problems with comprehension and to reduce response error (Willis, 2005). It is grounded in the Cognitive Aspects of Survey Methodology, which theorizes that complex cognitive processes are required to respond to questions, including comprehension of the questions, retrieval of information, judgment, and response processes (Willis, 2005).

*Sampling methods and subjects.* A convenience sample of seven panel members was recruited and is appropriate for CI, since depth of information is more important than breadth (Willis, 2005). Panel members for CI were recruited through community outreach (Appendix E. Advertisement for Recruitment of CI Panel Members). Eligibility criteria included being African-American; female; reported BMI $\geq$ 25; reported age $\geq$21 years; able to speak, read, and understand English; and no reported history of bariatric surgery. CI panel members had a mean age of 38.8 years (range 23 – 48) and a mean BMI of 34.3 kg/m$^2$ (range 28 – 44). One panel member had a high school diploma, one was currently in college, three had undergraduate degrees and two had Masters degrees.The setting was determined by the participant and included places of work or school, a library, and the business center at a local hotel. Panel members received a small remuneration in the form of a $25 gift card (See Appendix F for Screening Survey and Appendix G for Script for Telephone Screening).

*Data Collection.* After a short explanation about the purpose of the study and procedures (Appendix H. CI Survey Introduction and Interview Guide) panel members were asked to

complete the questionnaire (Harris et al., 2009; Harris, Thielke, Schuff, Obeid, & Oium, 2007), which consisted of a demographic section, followed by five sections with survey items. Panel members were interviewed as they completed each section to avoid possible bias from using a concurrent probing method and to prevent problems with recall that may occur in a completely retrospective debriefing (Willis, 2005). An interview guide of standardized and conditional probing questions was constructed using methods outlined by Willis (2005). The use of a standardized guide of proactive and anticipated probes is recommended when the interviewer is inexperienced and to minimize interview effect. Because the CI process is iterative, changes to the interview guide might be implemented after data analysis to further explore potential problems identified by panel members. All interviews were digitally recorded and transcribed verbatim by the PI, and the interviewer took field notes on each panel members behavior and body language as well as personal reflections about the interview (Willis, 2005).

*Data Analysis.* Data were analyzed by reviewing the recording transcripts and field notes of each individual interview guided by QAS-99 (Appendix B) within 48 hours of completion to identify and address possible problems with the questionnaire, interview guide, probes, or interviewing techniques (Willis, 2005). Data were organized and analyzed using NVivo software (QSR International, Pty., Doncaster, Victoria, Australia) so findings could be summarized. Instructions or items from the questionnaire that represented problems were revised or removed from the questionnaire. The data collection, analysis, and item revision processes were iterative, until no problem items were identified (Willis, 2005).

**Pilot test.**

A pilot test was conducted using an internet-based version of the questionnaire to examine the psychometric properties of the questionnaire, as well as feasibility and acceptability of recruitment, data collection and data analysis strategies.

***Recruitment and sample description.*** Pilot study participants were recruited over a 10-week period May, June, and July of 2016. Initial recruitment strategies included posting advertisements and fliers at community centers, retail and service businesses, and health clinics in the Upstate of South Carolina. The PI also visited predominantly African-American churches and health fairs in Greenville and Spartanburg counties to recruit participants. After the first seven weeks, IRB approval was obtained to widen the recruitment area to include the entire state of South Carolina. The PI and other members of the research team used personal contacts to reach additional potential participants. The PI hosted two virtual events on Facebook and invited friends and colleagues to the events; invitees were encouraged to share the event on their own timelines and to invite their own friends and colleagues. Participants who completed both the pretest and posttest were entered into a drawing for a gift card by providing an email address.

Interested parties were provided recruitment materials that included information about the pilot study, contact information for the PI, and the web address and access code to the online questionnaire. Inclusion and exclusion criteria were assessed through screening questions at the beginning of the survey. Eligibility criteria included being African-American; female; reported BMI $\geq 25$; age $\geq 21$; ability to read and understand English; no reported history of bariatric surgery; and access to the internet.

***Data collection.*** Research Electronic Data Capture (REDCap) was used for data collection and management. REDCap is a software toolset and workflow methodology for

electronic collection and management of research and clinical trial data (Harris et al., 2009; Harris, Thielke, Schuff, Obeid, & Oium, 2007). REDCap provided secure, web-based flexible applications, including real time validation rules with automated data type and range checks at the time of entry. Exports are made available for SPSS and Excel.

Any person who accessed the online survey and met screening criteria could participate in the study. Participants who successfully completed the questionnaire were automatically sent email invitations to complete the survey a second time for reliability testing. Reminders and access information were sent daily for four days starting 10 days after completing the questionnaire the first time.

***Data analysis.*** Quantitative data collected through the pilot study were analyzed using SPSS-24 (IBM Corp., Armonk, N.Y., USA). Descriptive statistics were calculated for participant demographics, response rate based on recruitment strategy, time to complete and acceptability of the survey. Qualitative data, obtained from a free text response question, were collated and reported verbatim (see Table 1). Internal consistency was calculated for each behavioral subscale using Cronbach's alpha and was based on each participant's pretest questionnaire. In addition to the behavioral subscales of dietary, physical activity, and self-monitoring behaviors, the internal consistency of the post-intention variables subscale was calculated. Temporal stability was examined using Pearson's r. According to Hertzog (2008) a correlation of 0.7 indicates of acceptable stability with with confidence in a sample size of at least 40 participants.

**Results**

**Development of Questionnaire.** (Appendix A). The first draft of the questionnaire included an exhaustive list of 354 questions that asked respondents about their attitudes and

beliefs related to weight management behaviors. There were 178 questions related to dietary behaviors; 106 about physical activity behaviors; and 70 questions about self-monitoring. Initial review by the PI resulted in 193 items; 84 related to dietary behaviors, 63 related to physical activity behaviors and 46 related to self-monitoring behaviors. Generally, items deleted from the first draft were redundant or, after careful consideration, found to be inconsistent with attitudes and beliefs identified through the dimensional analysis. The readability level was assessed using the "Show Readability" function in Microsoft Word, which calculates the difficulty of reading a document using the Flesch Readability Index and Flesch-Kinkaid Grade level formulas. This questionnaire has an index of 39.8 (difficult to read) and a reading grade level of 11.5.

**Content Validity Index.** I-CVI revealed 66 items considered not relevant by the review; these items included 24 items related to dietary behaviors, 24 items pertaining to physical activity, and 7 items assessing self-monitoring behaviors. In addition, one item evaluating the motivation to comply with certain people or groups was considered not relevant by the panel. All items considered not relevant were deleted from the questionnaire, leaving a reduced questionnaire with a total of 127 items. One item was revised based on qualitative feedback from an expert panel member that indicated a grammatical error in the question.

SS-CVI was calculated for three subscales: dietary behavior, physical activity, and self-monitoring by averaging the sums of I-CVIs for each subscale. The SS-CVI for dietary behaviors, physical activity, and self-monitoring behaviors were 0.81, 0.86 and 0.80, respectively. The S-CVI, calculated as the average of the sums of the I-CVIs of all items, was 0.83. In this study, SS-CVIs and S-CVI of 0.8 or greater were deemed acceptable, indicating that the reduced questionnaire is a valid measure of the defined variables that determine weight-related behaviors.

**Cognitive Interviewing.** Many of the CI panel members indicated that the directions for marking their responses were unclear, both in how they were to respond and the mechanics to record their answer. For example, one panel member thought she could only mark the extreme ends of the scale, as opposed to indicating the strength of their response on a continuum as represented by the slider bar used by the survey software. Others had difficulty moving the cursor on the slider bar to answer the question. Several panel members indicated that some of the questions were irrelevant to them, as they do not engage in the behavior in question. The problems were addressed by embedding a short, two-minute video that demonstrated the use of the cursor and slider bar. While demonstrating the use of the slider, the narrator also addressed indicating the strength of their belief or attitudes as if the survey participants did engage in the behavior, even if she did not in real life.

Panel members in the first three interviews complained that several response items were confusing due to the changing polarity of the response items and crowding of the scale by numbers and hash marks. This problem was corrected by removing the numbers and the hash marks from the scale altogether. Subsequent interviewees agreed that the plain line scale was easier to use when given a choice between the numbered scale and the plain line scale.

In the original version of the questionnaire, panel members were asked to provide their height in inches. Several panel members stated this may pose a problem in less educated survey participants. One panel member suggested using a conversion chart within the questionnaire and this was implemented. Other panel members validated this strategy to prevent problems with this potentially difficult calculation.

The wording in several items was changed to improve clarity. In questions concerning the impact of strong emotions on behavior, the wording was changed from "strong emotions

would make it difficult for me to consume…." to "strong emotions make it difficult for me to control…." The phrase "easy availability and affordability" was changed to "easy availability and/or affordability" to make it more applicable to survey participants.

**Pilot Testing.**

***Response rate and sample characteristics.*** The survey was accessed 90 times during the recruitment period and 47 participants completed the survey at least one time. Thirty-two participants completed the survey a second time for reliability testing. Participants ranged in age from 21 – 67 years old, with a median age of 41. The median BMI was 34.7 kg/m$^2$ and ranged from a low of 25.1 kg/m$^2$ to a high of 79.8 kg/m$^2$. Demographic data are presented in Table 2.

***Reliability and validity.*** (Table 3). Cronbach's alpha was calculated for each behavioral subscale and the post-intention variable subscale. Each demonstrated internal consistency with Cronbach's alphas of >0.8, which exceeds the recommended >0.7 (Hertzog, 2008). Test-retest reliability was evaluated using Pearson's *r*. Each of the behavioral subscales demonstrated moderate reliability with *r* values of 0.520 (dietary), 0.594 (physical activity), and 0.532 (self-monitoring) and $p < 0.002$ for those subscales. One participant had widely divergent scores on the post-intention variable subscale between the first and second assessments, resulting in an $r = 0.370$ and $p = 0.252$ for this subscale. The correlation increases to $r = 0.608$ ($p = 0.021$) after removing the outlier.

***Relevance and acceptability.*** Participants were asked to rate importance, relevance and acceptability of this research topic, questionnaire and survey items through a series of seven questions after completing the IBM-based questionnaire. Overall, participants indicated that the research topic is important and that the questionnaire items are important and relevant to OWO AAF who want to improve their health through behavioral change. The average time to

complete the survey was just over 15 minutes and the majority of participants felt that the survey was neither to hard nor took too much time to complete. One participant indicated that some questions on the survey were insensitive or offensive; however, they did not indicate which questions or how they might be insensitive or offensive. One participant stated that "many of the questions seem to be tricky and may be too hard to understand for the average person." Two other participants indicated that taking the survey made them more aware of their behaviors and importance of taking care of themselves.

**Discussion**

This three phase study describes the initial development and pretesting of a novel behaviorally-based and theoretically grounded questionnaire that may be useful in the development and evaluation of weight management interventions for OWO AAF who want to decrease risk and improve their health. The questionnaire started with 296 questions and was reduced and refined through use of QAS-99, content validity indexing, and CI. The questionnaire now consists of 120 items that can be easily completed in 20 minutes. Preliminary findings suggest that the questionnaire demonstrates adequate validity and moderate reliability and may be an effective tool in the development of culturally-relevant and effective interventions for OWO AAF.

**Limitations**

There are limitations related to the number of participants who completed the assessment two times for reliability testing and Pearson's *r*. Hertzog (2008) indicates that a Pearson's *r* of at 0.7 with N = 40 represents adequate reliability for a new instrument, with $p < 0.10$. Only 34 participants completed the questionnaire twice for test-retest reliability testing and Pearson's r in the 0.5 – 0.6 range supports moderate reliability. The low number of participants may be

attributed to several problems with recruitment of participants. First, strategies were not effective in recruiting an adequate number of participants. This was related to several circumstances, including a short, 10-week recruitment time frame; initial limitation of recruitment to three counties in the Upstate of South Carolina; inability to obtain IRB-approval from county health departments and community health care facilities (due to time constraints); and poor turnout at local health fairs. In addition, remuneration was limited due to budget. Participation in CI and the pilot study incurred a burden on the participant due to the length of the survey. In addition, the PI for this study is a novice researcher, is not ethnically congruent, and was unprepared for the lack of interest of the sample population in participation. Future research will include a more prolonged recruitment and data collection time frame.

Another limitation was the relative high education level of participants. Almost 35 percent of participants in the pilot study had a Master's degree or higher. This was probably related to the overall recruitment strategies. Further, the directions for the questionnaire have a Flesch readability index of 39.8 (difficult to read) and a Flesch-Kincaid grade level of 11.5. Given the importance to include various literacy levels, focused efforts must be made to include participants from all socioeconomic and education levels so that more generalizable data is obtained and improving readability of the questionnaire.

**Conclusion**

This questionnaire to assess attitude and beliefs about weight management behaviors in OWO AAF shows potential based on preliminary findings. Participants in the pretesting and pilot-testing phases indicated that this research topic is important and relevant and expressed enthusiasm and interest in this and future research. While content validity and internal consistency statistics were strongly positive, this particular study did not adequately demonstrate

reliability of the instrument. Future endeavors will focus on strengthening recruitment strategies and revision and refinement of the questionnaire based on factor analysis. Once that research is completed and reliability and validity are established with confidence, factor analysis studies are necessary to further refine the questionnaire.

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**Figure 1.** Integrated Behavioral Model
(Adapted from Yzer, 2012; Montano & Kasprzyk, 2008).

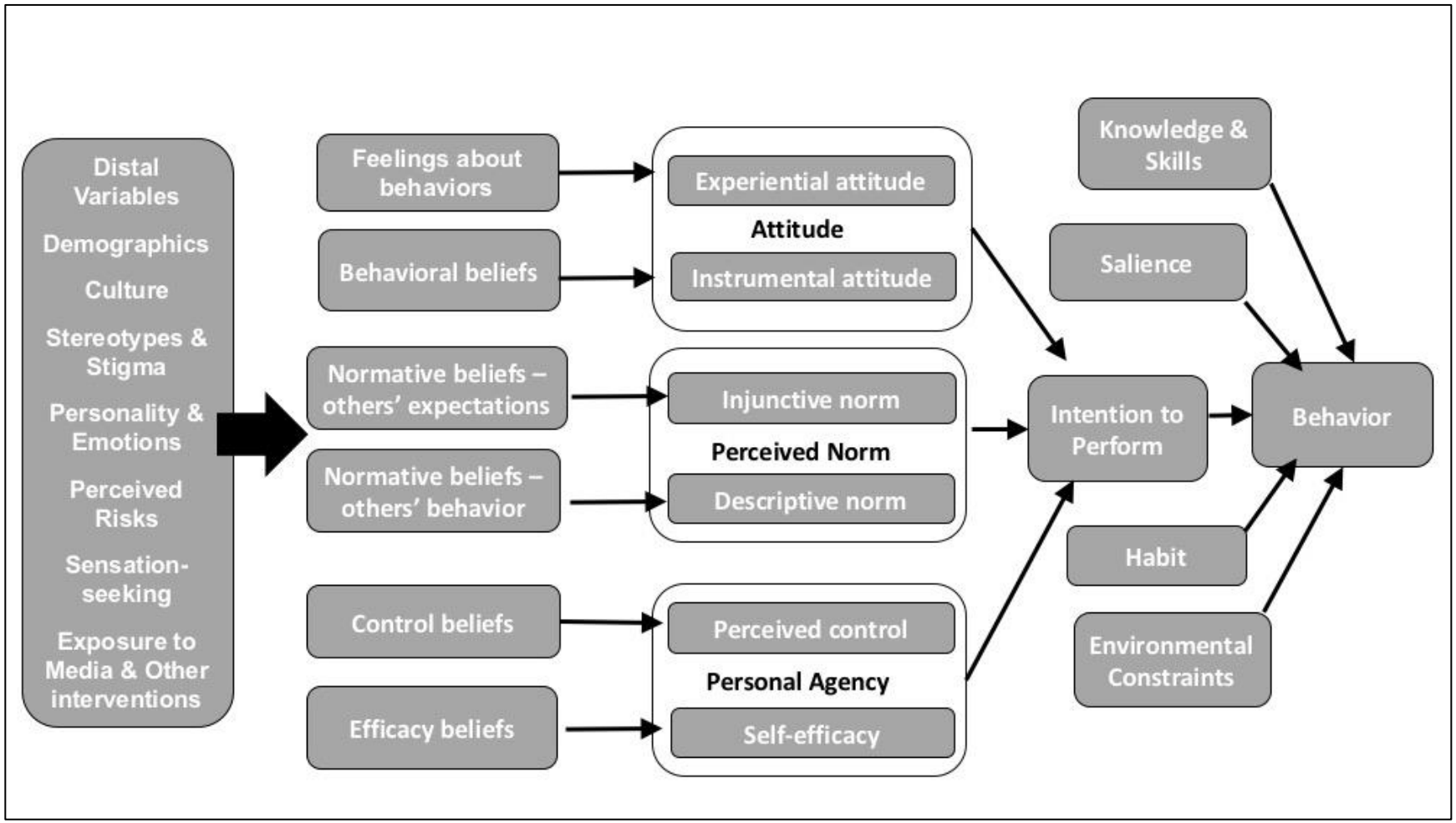

Figure 2. Study Flow Diagram. This diagram outlines the three phases of the development, pretesting and pilot-testing of the Questionnaire on Weight Management Behaviors.

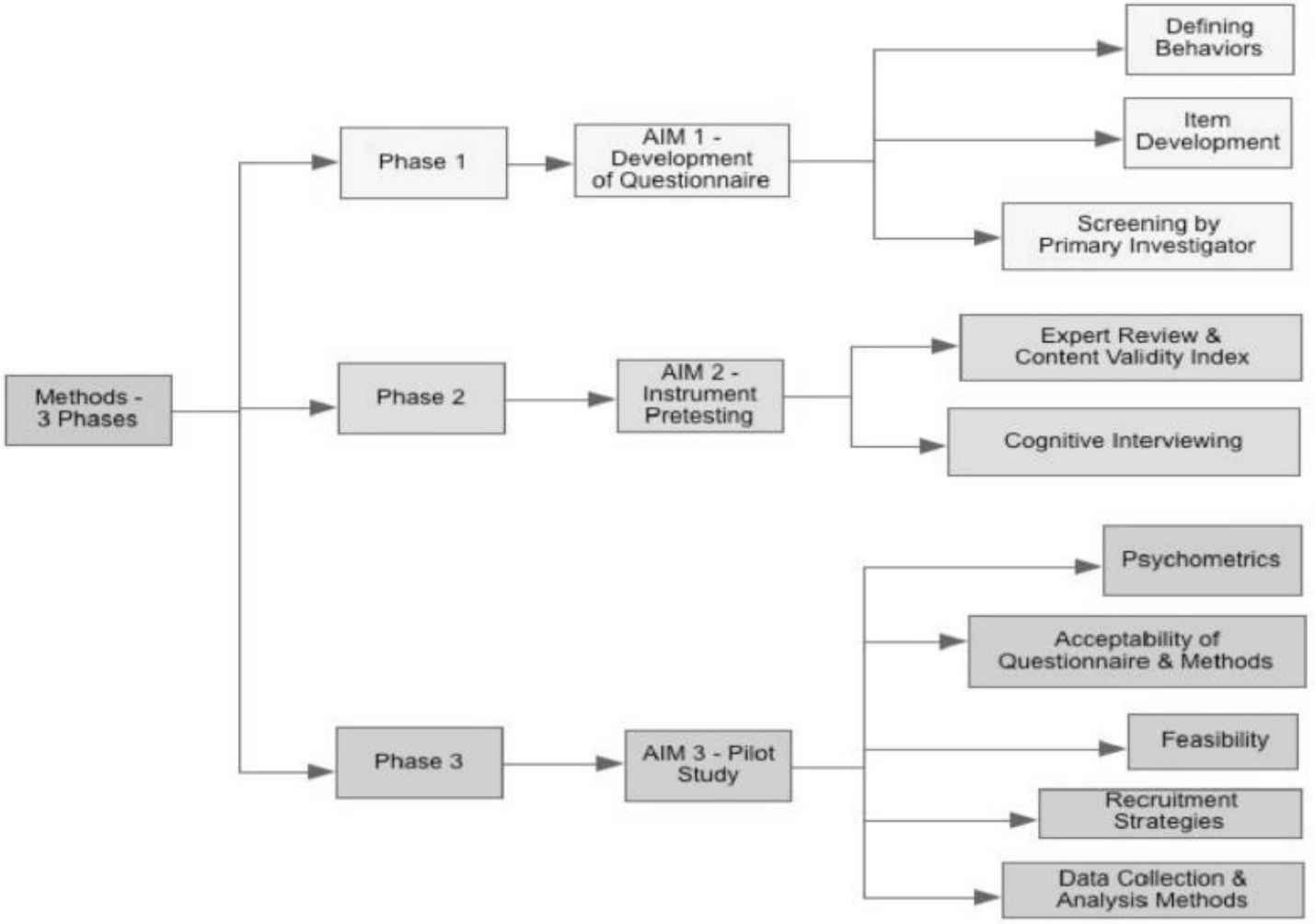

Figure 2. Conceptual Model of Weight Management Behaviors in Overweight and Obese African American Females

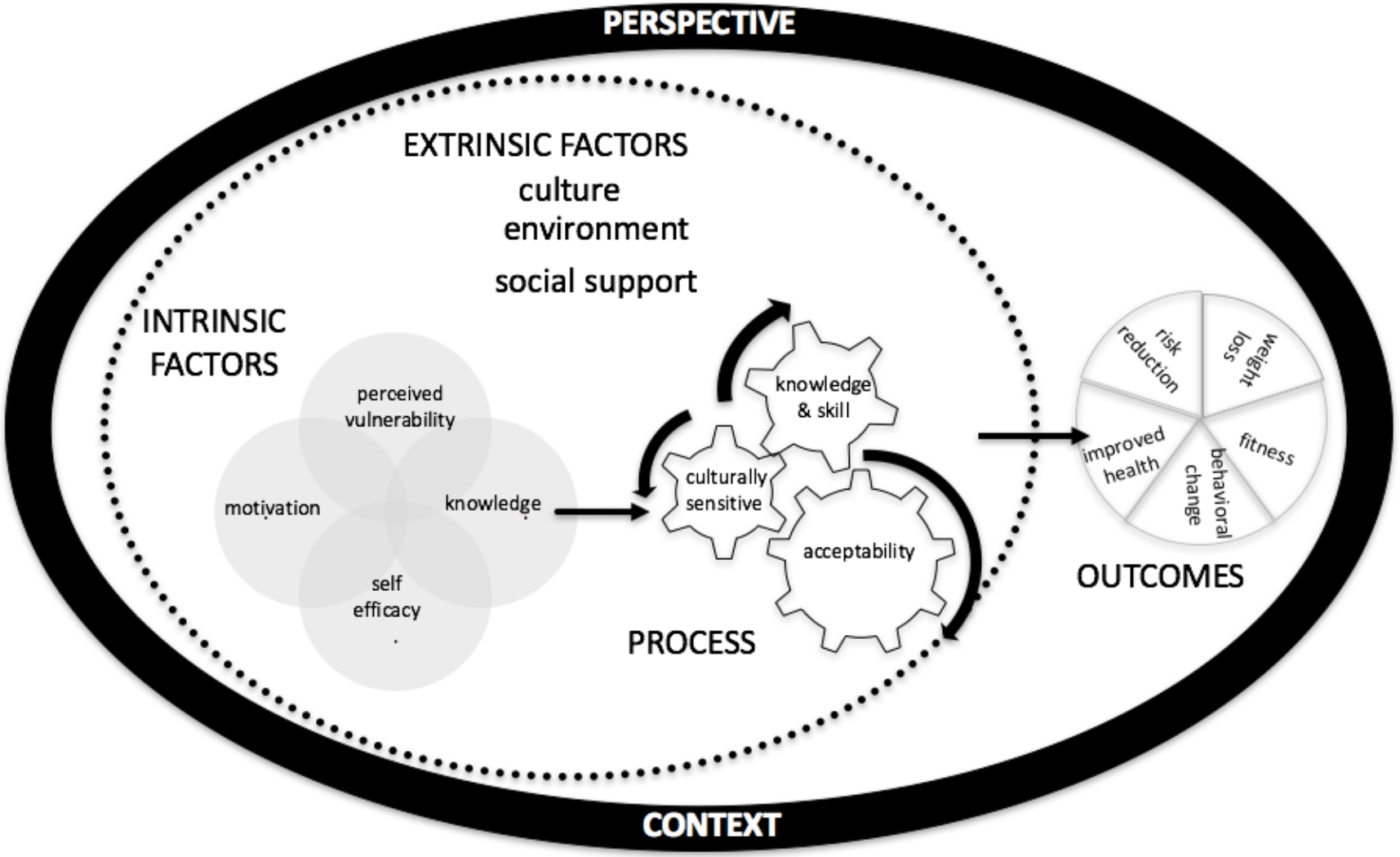

Table 1. Qualitative Responses from Pilot Study

| | |
|---|---|
| 1 | Great survey! |
| 2 | There should have been questions about current diet and if there were health and/or physical challenges." |
| 3 | I was glad to be able to take. It made me aware of how important is is to take care of my health. |
| 4 | The survey was very eye opening. I learned from answering the questions that I can do more to help myself lose weight |
| 5 | Many of the questions seem to be tricky and hard to understand for the average person. |
| 6 | Instead of slider responses, other methods would have been easier and less time consuming. |
| 7 | It was a great survey. I look forward to finding out more about the research. |

Table 2. Description of Sample.

| | | **N = 47** | **%** |
|---|---|---|---|
| Age (years) | 21 - 29 | 12 | 25.5 |
| | 30 - 39 | 11 | 23.4 |
| | 40 - 49 | 8 | 17.0 |
| | 50 - 59 | 5 | 10.6 |
| | 60 - 67 | 9 | 19.1 |
| BMI ($kg/m^2$ ) | 25 – 29.9 | 18 | 38.3 |
| | 30 – 34.9 | 11 | 23.4 |
| | 35 – 39.9 | 8 | 17 |
| | > 40 | 10 | 21.3 |
| Level of Education | High School Graduate | 2 | 4.3 |
| | Some College | 9 | 19.1 |
| | Associates Degree | 2 | 4.3 |
| | Bachelor's Degree | 15 | 31.9 |
| | Some Graduate School | 3 | 6.4 |
| | Master's Degree | 11 | 23.4 |
| | Post-Master's | 5 | 10.6 |
| County of Residence | Anderson | 1 | 2.1 |
| | Greenville | 8 | 17.0 |
| | Spartanburg | 17 | 36.2 |
| | Other | 21 | 44.7 |
| Area of residence | Urban | 15 | 31.9 |
| | Suburban | 17 | 36.2 |
| | Rural | 15 | 31.9 |

Table 3. Internal Validity and Temporal Stability of Subscales.

| | | Internal Validity N = 47 | Test-Retest Reliability N = 34 | |
|---|---|---|---|---|
| | # items | Cronbach's α | Pearson's r | p-value |
| Dietary Behaviors | 57 | .892 | .520 | .002 |
| Physical Activity Behaviors | 32 | .811 | .594 | <.001 |
| Self-Monitoring Behaviors | 20 | .806 | .532 | .001 |
| Post-Intention Variables | 11 | .862 | | |
| - including all data | | | .370 | .031 |
| - excluding 1 outlier* | | | .516 | .002 |

*One respondent had widely divergent values on the post intention subscale for the first and second assessments.
Analyses of this subscale were repeated excluding data from this participant.

## Summary and Conclusion

The manuscripts in this compendium describe the development of knowledge related to the complex health problem of overweight and obesity in African American females and the necessity for theoretically-grounded behavioral interventions necessary to effectively address the needs of this vulnerable population. Existing weight management interventions do not meet the needs of OWO AAF by failing to include or focus on OWO AAF participants and neglecting consideration of biopsychosocial variables of weight-related behaviors (Fitzgibbon et al., 2012; Kong, Tussing-Humphreys, Odoms-Young, Stolley, & Fitzgibbon, 2014). To meet the needs of OWO AAF, weight management interventions and strategies should be grounded in theory (Glanz, Rimer, & Viswanath, 2015) and focus on the individual, cultural, and socioeconomic factors that determine dietary, physical activity, and self-monitoring behaviors (Fitzgibbon et al., 2012; James, 2013; Kumanyika, Whitt-Glover, & Haire-Joshu, 2014).

The first manuscript describes development of a conceptual model of the phenomenon of weight management in OWO AAF through dimensional analysis of current research (Sutton, Magwood, Nemeth, & Jenkins, 2016). The model that emerged from the dimensional analysis illustrates a multifaceted and adaptive interaction of intrinsic and extrinsic conditions, behavioral processes, and possible outcomes. The paucity of behavioral change research became apparent to the PI through the literature search performed as part of the dimensional analysis. Thus, a scoping review of behavioral weight management interventions in OWO AAF was undertaken to identify gaps in the research and is included as the second manuscript in this compendium.

The second manuscript, scoping review, included 23 articles identified through a systematic search of the current literature (Sutton, Magwood, Jenkins, & Nemeth, 2016). Analysis revealed a group of studies that were dissimilar in their use of theory, settings, study design, interventions, strategies and outcome variables. Compounding the lack of available research, many of the included studies failed to address application of theory, research methods, interventions, and strategies. Of particular concern was the inconsistent use or explication of behavioral theory to ground interventions and strategies in the

analyzed studies, thwarting replication and examination of effectiveness of the interventions. This finding motivated the PI to consider how to best develop behavioral weight management interventions for populations of OWO AAF.

The third article in this dissertation describes the development and pretesting of a weight management behaviors questionnaire that may be effective in identifying the needs of OWO AAF. In considering theoretical frameworks that may best support effective and replicable weight management interventions in OWO AAF, the PI discovered that the constructs and premises of the Integrated Behavioral Model (IBM) parallel the findings of the dimensional analysis performed for the first manuscript in this compendium. Thus, the IBM was selected to guide the development of the questionnaire. This study occurred in three phases: Development and review of questionnaire items by the PI; pretesting through panel review to determine content validity and cognitive interviewing to identify potential problems with the questionnaire and items; and pilot testing to examine feasibility, validity and reliability. Initial findings of the pilot study indicate that the questionnaire may be a valid tool in identifying the needs of OWO AAF, however, lacks support for temporal stability with confidence due to small sample size and moderate correlation between test and retest score (Hertzog, 2008) .

There are limitations to these studies, particularly related to the paucity of available research, a novice and ethnically incongruent PI, and small sample size for the pilot study. In addition, the developed questionnaire had a relatively high calculated reading level along with a highly educated study sample. Although the PI had limited experience close review and mentoring by the PI's mentor and dissertation committee were important in minimizing limitations associated with a novice PI.

Regardless of the potential limitations of these studies, the contribution to the science and nursing may be important. The model developed through dimensional analysis provides an in-depth explication that reveals the complexity of weight management in OWO AAF and provides a framework that can be used to develop weight management interventions in diverse communities of OWO AAF. The scoping review revealed a paucity of weight management research that focuses on the needs of OWO AAF. In addition, the scoping review revealed that few of the existing studies provide details of theoretical

framework, methods, interventions, strategies and outcome variables, which prevents replication and evaluation. Finally, preliminary data from the pilot study shows that the questionnaire may be a valid instrument in assessing the needs of OWO AAF who want to improve their health and decrease risks through weight management interventions.

In the immediate future, continuing research should focus on decreasing the overall reading level of the questionnaire and expanding recruitment strategies to include a broad range of education levels. A larger adequately powered study should be conducted to perform factor analysis and further refine the questionnaire. After those studies are completed and the questionnaire is refined, research should focus on the use of the questionnaire as a needs assessment and guide for development of weight management interventions.

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**Appendix A. Unrefined Questionnaire**

***Please answer each of the following questions by circling the number that best describes your opinion. Some of the questions may seem similar, but they do address different issues. Please read each question carefully.***

OB1. For me to be healthy is:

important: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unimportant

OB2. For me to be healthy, losing weight is

unnecessary: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:necessary

OB3. Improving my physical fitness would be

bad: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: good

OB4. Losing weight would be:

bad: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: good

OB5. If I lost weight I would look:

unattractive: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: attractive

PC6. I feel emotional stress or depression.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

PC7. I prepare food for my family.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

PC8. I attend many church activities.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

PC9. Unhealthy food choices are more easily available than healthy food choices.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

PC10. I have additional responsibilities.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

PC11. It easy to exercise in my neighborhood.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

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PC12. It is not safe to exercise in my neighborhood.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

PC13. I have easy access to gyms or recreation areas where I can for exercise.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

PC14. I feel tired and unmotivated.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

MC15. In general, how much do you care what most people think you should do?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

MC16. In general, how much do you care what your health care provider thinks you should do?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

MC17. In general, how much do you care what your pastor or deacon thinks you should do?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

MC18. In general, how much do you care what your husband/wife/boyfriend/girlfriend thinks you should do?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

MC19. In general, how much do you care what your parents think you should do?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

MC20. In general, how much do you care what your children think you should do?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

MC21. In general, how much do you care what your best friends think you should do?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRH22. When it comes to matters of health, how much do you want to be like your health care providers?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRH23. When it comes to matters of health, how much do you want to be like your pastor or deacons?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

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IRH24. When it comes to matters of health, how much do you want to be like your husband/wife/boyfriend/girlfriend?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRH25. When it comes to matters of health, how much do you want to be like your parents?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRH26. When it comes to matters of health, how much do you want to be like your children?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRH27. When it comes to matters of health, how much do you want to be like your best friends?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRBS28. When it comes to matters of body size, how much do you want to be like your health care providers?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRBS29. When it comes to matters of body size, how much do you want to be like your pastor or deacons?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRBS30. When it comes to matters of body size, how much do you want to be like your husband/wife/boyfriend/girlfriend?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRBS31. When it comes to matters of body size, how much do you want to be like your parents?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRBS32. When it comes to matters of body size, how much do you want to be like your children?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRBS33. When it comes to matters of body size, how much do you want to be like your best friends?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

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***EACH QUESTION IN THIS SECTION REFERS TO EATING A HEALTHY DIET THAT LIMITS SUGARS, FATS AND CALORIES, WHILE INCREASING FRUITS, VEGETABLES AND WHOLE GRAINS.***

BID1. I plan on consuming 4 – 5 servings of fruits and vegetables each day

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BID34. I will limit my daily caloric intake to prescribed amount

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BID35. I intend to limit my daily intake of fats to prescribed amount

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BID36. I will decrease my daily intake of sugary drinks

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

OED37. Eating 4 – 5 servings of vegetables a day would make me feel healthier

Disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: Agree

OED38. If I limited my daily caloric intake to a prescribed amount I would probably stay hungry

Disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: Agree

OED39. Eating low fat foods would decrease my enjoyment of eating

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

OED40. Unsweetened or diet drinks do not taste good.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DPCD41. Consuming 4 – 5 servings of fruits and vegetables each day would be

difficult: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:easy
not under my control: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:under my control

DPCD42. Limiting my daily intake of calories each day would be

difficult: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:easy
not under my control: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:under my control

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DPCD43. Decreasing my daily fat intake each day would be

difficult: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:easy
not under my control: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:under my control

DPCD44. Limiting the number of sugary drinks I consume each day each day would be

difficult: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:easy
not under my control: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:under my control

IRD45. When it comes to matters of diet, how much do you want to be like your health care providers?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRD46. When it comes to matters of diet, how much do you want to be like your pastor or deacons?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRD47. When it comes to matters of diet, how much do you want to be like your husband/wife/boyfriend/girlfriend?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRD48. When it comes to matters of diet, how much do you want to be like your parents?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRD49. When it comes to matters of diet, how much do you want to be like your children?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRD50. When it comes to matters of diet, how much do you want to be like your best friends?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

DASD51. My consuming 4 – 5 servings of fruits and vegetables each day would be:

unpleasant: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: pleasant
unenjoyable: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: enjoyable
aggravating: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:sataisfying
bad: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:good
foolish: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:wise
not important: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:important
useless: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:useful

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DASD59. Limiting my daily caloric intake to prescribed amount would be:

unpleasant: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: pleasant
unenjoyable: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: enjoyable
aggravating: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:sataisfying
bad: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:good
foolish: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:wise
not important: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:important
useless: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:useful

DASD67. Limiting my daily intake of fats to prescribed amount would be:

unpleasant: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: pleasant
unenjoyable: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: enjoyable
aggravating: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:sataisfying
bad: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:good
foolish: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:wise
not important: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:important
useless: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:useful

DASD75. Limiting my daily intake of sugary drinks to prescribed amount would be:

unpleasant: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: pleasant
unenjoyable: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: enjoyable
aggravating: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:sataisfying
bad: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:good
foolish: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:wise
not important: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:important
useless: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:useful

***My health would improve if:***

BBSD83. I consumed 4 -5 servings of fruits and vegetables each day.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSD84. I limited my daily caloric intake to a prescribed amount.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSD85. I limited my daily fat intake to a prescribed amount.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSD86. I limited my daily intake of sugary drinks to a prescribed amount.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

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***My physical fitness would improve if:***

BBSD87. I consumed 4 -5 servings of fruits and vegetables each day.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSD88. I limited my daily caloric intake to a prescribed amount.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSD89. I limited my daily fat intake to a prescribed amount.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSD90. I limited my daily intake of sugary drinks to a prescribed amount.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

***I would lose weight if:***

BBSD91. I consumed 4 -5 servings of fruits and vegetables each day.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSD92. I limited my daily caloric intake to a prescribed amount.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSD93. I limited my daily fat intake to a prescribed amount.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSD94. I limited my daily intake of sugary drinks to a prescribed amount.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

***Most people I know think I should:***

NBSD95. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD96. Limit my daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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NBSD97. Decrease my daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD98. Limit the number of sugary drinks I consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My health care provider thinks I should:***

NBSD99. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD100. Limit my daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD101. Decrease my daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD102. Limit the number of sugary drinks I consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My pastor or deacon thinks I should:***

NBSD103. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD104. Limit my daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD105. Decrease my daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD106. Limit the number of sugary drinks I consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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***My husband/wife/boyfriend/girlfriend thinks I should:***

NBSD107. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD108. Limit my daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD109. Decrease my daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD110. Limit the number of sugary drinks I consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My parents think I should:***

NBSD111. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD112. Limit my daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD112. Decrease my daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD114. Limit the number of sugary drinks I consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My children think I should:***

NBSD115. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD116. Limit my daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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NBSD117. Decrease my daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD118. Limit the number of sugary drinks I consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My best friends think I should:***

NBSD119. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD120. Limit my daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD121. Decrease my daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSD122. Limit the number of sugary drinks I consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***Most people I know:***

DNBD123. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD124. Limit their daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD125. Limit their daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD125. Limit the number of sugary drinks they consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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***My health care providers:***

DNBD127. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD128. Limit their daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD129. Limit their daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD130. Limit the number of sugary drinks they consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My pastor or deacon:***

DNBD131. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD132. Limit their daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD133. Limit their daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD134. Limit the number of sugary drinks they consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My husband/wife/boyfriend/girlfriend:***

DNBD135. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD136. Limit their daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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OB – outcome beliefs OE – outcome evaluations PB – past behavior PC – power of control factors

DNBD137. Limit their daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD138. Limit the number of sugary drinks they consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My parents:***

DNBD139. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD140. Limit their daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD141. Limit their daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD142. Limit the number of sugary drinks they consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My children:***

DNBD143. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD144. Limit their daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD145. Limit their daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD146. Limit the number of sugary drinks they consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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***My best friends:***

DNBD147. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD148. Limit their daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD149. Limit their daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBD150. Limit the number of sugary drinks they consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***Emotional stress and depression would make it difficult for me to:***

CBD151. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD152. Limit my daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD153. Limit my daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD154. Limit the number of sugary drinks I consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***The easy availability and affordability of unhealthy food choices would make it difficult for me to:***

CBD155. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD156. Limit my daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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CBD157. Limit my daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD158. Limit the number of sugary drinks I consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***Preparing food for my family makes it easy for me to:***

CBD159. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD160. Limit my daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD161. Limit my daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD162. Limit the number of sugary drinks I consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***Church activities make it difficult for me to:***

CBD163. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD164. Limit my daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD165. Limit my daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD166. Limit the number of sugary drinks I consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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***Other responsibilities make it difficult for me to***

CBD167. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD168. Limit my daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD169. Limit my daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD170. Limit the number of sugary drinks I consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***If I were tired or unmotivated, it would be more difficult for me to:***

CBD171. Consume 4 – 5 servings of fruits and vegetables each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD172. Limit my daily intake of calories

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD173. Limit my daily fat intake

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBD174. Limit the number of sugary drinks I consume each day

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***Over the last month, I have:***

PBD175. Consumed 4 – 5 servings of fruits and vegetables each day

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

PBD176. Limited my daily intake of calories

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

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PBD177. Limited my daily fat intake

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

PBD178. Limited the number of sugary drinks I consume each day

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

***EACH QUESTION IN THIS SECTION REFERS TO PARTICIPATING IN 30 – 60 MINUTES OF PHYSICAL ACTIVITY 3 – 5 TIMES PER WEEK.***

BIPA179. I plan on participating in moderately-intense aerobic activities at least 150 minutes per week.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BIPA180. I will participate in muscle strengthening activities two days per week.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BIPA181. I plan to decrease the amount of time spent each day watching television or playing video games.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

OEPA182. I would feel good if I did at least 150 minutes of moderately-paced aerobic exercise per week

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

OEPA183. I would feel good if I did muscle strengthening activities two days per week.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

OEPA184. I would be bored if I decreased the amount of time spent each day watching television or playing video games.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

DPCPA185. Participating in 150 minutes of moderately-intense aerobic activity each week would be

difficult: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:easy
not under my control: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:under my control

DPCPA186. Participating in muscle strengthening activities 2 days a week would be

difficult: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:easy
not under my control: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:under my control

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DPCPA187. Decreasing the amount of time I spend watching TV or playing videos games each day would be
difficult: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:easy
not under my control: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:under my control

IRPA188. When it comes to matters of physical activity, how much do you want to be like your health care providers?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRPA189. When it comes to matters of physical activity, how much do you want to be like your pastor or deacons?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRPA190. When it comes to matters of physical activity, how much do you want to be like your husband/wife/boyfriend/girlfriend?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRPA191. When it comes to matters of physical activity, how much do you want to be like your parents?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRPA192. When it comes to matters of physical activity, how much do you want to be like your children?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

IRPA193. When it comes to matters of physical activity, how much do you want to be like your best friends?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very much

DASPA194. Participating in moderately-intense aerobic activities at least 150 minutes per week would be:

unpleasant: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: pleasant
unenjoyable: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: enjoyable
aggravating: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:sataisfying
bad: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:good
foolish: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:wise
not important: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:important
useless: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:useful

DASPA200. Participating in muscle strengthening activities two days per week would be

unpleasant: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: pleasant
unenjoyable: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: enjoyable
aggravating: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:sataisfying
bad: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:good
foolish: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:wise
not important: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:important
useless: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:useful

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DASPA208. Decreasing amount of time spent each day watching television or playing video games would be:

unpleasant: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: pleasant
unenjoyable: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: enjoyable
aggravating: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:sataisfying
bad: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:good
foolish: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:wise
not important: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:important
useless: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:useful

***My health would improve if:***

BBSPA209. I participated in moderately-intense aerobic activities at least 150 minutes per week.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSPA210. I participated in muscle strengthening activities two days per week.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSPA211. I decreased the amount of time spent each day watching television or playing video games.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

***My physical fitness would improve if:***

BBSPA212. I participated in moderately-intense aerobic activities at least 150 minutes per week.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSPA213. I participated in muscle strengthening activities two days per week.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSPA214. I decreased the amount of time spent each day watching television or playing video games.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

***I would lose weight if:***

BBSPA215. I participated in moderately-intense aerobic activities at least 150 minutes per week.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSPA216. I participated in muscle strengthening activities two days per week.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

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BBSPA217. I decreased the amount of time spent each day watching television or playing video games.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

***Most people I know think I should:***

NBSPA218. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSPA219. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSPA220. Decrease the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My health care provider thinks I should:***

NBSPA221. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSPA222. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSPA223. Decrease the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My pastor or deacon thinks I should:***

NBSPA224. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSPA225. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSPA226. Decrease the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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***My husband/wife/boyfriend/girlfriend thinks I should:***

NBSPA227. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSPA228. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSPA229. Decrease the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My parents think I should:***

NBSPA230. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSPA231. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSPA232. Decrease the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My children think I should:***

NBSPA233. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSPA234. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSPA235. Decrease the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My best friends think I should:***

NBSPA236. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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NBSPA237. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSPA238. Decrease the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***Most people I know:***

DNBPA239. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBPA240. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBPA242. Limit the amount of time they spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My health care providers:***

DNBPA243. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBPA244. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBPA245. Limit the amount of time they spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My pastor or deacon:***

DNBPA246. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBPA247. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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DNBPA248. Limit the amount of time they spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My husband/wife/boyfriend/girlfriend:***

DNBPA249. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBPA250. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBPA251 Limit the amount of time they spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My parents:***

DNBPA252. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBPA253. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBPA254. Limit the amount of time they spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My children:***

DNBPA255. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBPA256. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBPA257. Limit the amount of time they spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

BCS – behavioral control strength BBS – behavioral belief strength BI – behavior intention CB – control beliefs
DAS – direct attitude scale DNB – descriptive normative beliefs DPC – direct perceived control
IR – identification with referent MC – motivation to comply NBS – normative belief strength
OB – outcome beliefs OE – outcome evaluations PB – past behavior PC – power of control factors

***My best friends:***

DNBPA258. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBPA259. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBPA260. Limit the amount of time they spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***Emotional stress and depression would make it difficult for me to:***

CBPA261. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBPA262. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBPA263. Limit the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***Church activities make it difficult for me to:***

CBPA264. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBPA265. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBPA266. Limit the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***Other responsibilities make it difficult for me to:***

CBPA267. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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OB – outcome beliefs OE – outcome evaluations PB – past behavior PC – power of control factors

CBPA268. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBPA269. Limit the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My neighborhood environment makes it easy for me to:***

CBPA270. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBPA271. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBPA272. Limit the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***The lack of safe environments surrounding my neighborhood makes it difficult for me to:***

CBPA273. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBPA274. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBPA275. Limit the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***If I were tired or unmotivated, it would be more difficult for me to:***

CBPA276. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBPA277. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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CBPA278. Limit the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***If I had easy access to gyms or other recreational areas to exercise I would:***

CBPA279. Participate in 150 minutes of moderately-intense aerobic activity each week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBPA280. Participate in muscle strengthening activities 2 days a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBPA281. Limit the amount of time I spend watching TV or playing videos games each day.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***Over the last month, I have:***

PBPA282. Participated in 150 minutes of moderately-intense aerobic activity each week.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

PBPA283. Participated in muscle strengthening activities 2 days a week.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

PBPA284. Limited the amount of time I spend watching TV or playing videos games each day.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

***EACH QUESTION IN THIS SECTION REFERS TO SELF-MONITORING OF YOUR DAILY FOOD INTAKE, PHYSICAL ACTIVITY AND WEIGHT.***

BISM285. I intend to keep a diary that tracks my diet and physical activity.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BISM286. I will weigh myself one time weekly.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

OESM287. It would be aggravating to keep a daily diary to track my diet and physical activity

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

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OESM288. Weighing myself each week would be frustrating.

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

DPCSM2891. Keeping a diary of my daily diet and physical activity would be

difficult: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:easy
not under my control: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:under my control

DPCSM291. Weighing myself once a week would be

difficult: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:easy
not under my control: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:under my control

DASSM292. Keeping a diary that tracks my physical activity, calories, fruit and vegetable servings and intake of fats and sugary drinks would be:

unpleasant: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: pleasant
unenjoyable: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: enjoyable
aggravating: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:sataisfying
bad: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:good
foolish: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:wise
not important: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:important
useless: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:useful

DASSM299. Weighing myself one time a week would be:

unpleasant: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: pleasant
unenjoyable: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: enjoyable
aggravating: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:sataisfying
bad: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:good
foolish: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:wise
not important: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:important
useless: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:useful

***My health would improve if:***

BBSM305. Kept a diary that tracks my daily diet and physical activity

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSM306. Weigh myself once a week

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

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***My physical fitness would improve if:***

BBSM307 Kept a diary that tracks my daily diet and physical activity

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSM260. Weigh myself once a week

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

***I would lose weight if:***

BBSM261. Kept a diary that tracks my daily diet and physical activity

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

BBSM262 Weigh myself once a week

unlikely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: likely

***Most people I know think I should:***

NBSSM263. Keep a diary of my daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSSM264. Weight myself once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My health care provider thinks I should:***

NBSSM265. Keep a diary of my daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSSM266. Weight myself once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My pastor or deacon thinks I should:***

NBSSM267. Keep a diary of my daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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NBSSM325. Weight myself once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My husband/wife/boyfriend/girlfriend thinks I should:***

NBSSM268. Keep a diary of my daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSSM270. Weight myself once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My parents think I should:***

NBSSM271. Keep a diary of my daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSSM272. Weight myself once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My children think I should:***

NBSSM273. Keep a diary of my daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSSM1274. Weight myself once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My best friends think I should:***

NBSSM275. Keep a diary of my daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

NBSSM276. Weight myself once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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***Most people I know:***

DNBSM334. Keep a diary of their daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBSM278. Weigh themselves at least once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My health care providers:***

DNBSM279. Keep a diary of their daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBSM280. Weigh themselves at least once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My pastor or deacon:***

DNBSM281. Keeps a diary of their daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBSM282. Weighs themselves at least once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My husband/wife/boyfriend/girlfriend:***

DNBSM283. Keep a diary of their daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBSM284. Weigh themselves at least once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My parents:***

DNBSM285. Keep a diary of their daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

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DNBSM343. Weigh themselves at least once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My children:***

DNBSM287. Keep a diary of their daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBSM288. Weigh themselves at least once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***My best friends:***

DNBSM289. Keep a diary of their daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

DNBSM290. Weigh themselves at least once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***Church activities make it difficult for me to:***

CBSM292. Keep a diary of my daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBSM292 Weigh myself once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***Other responsibilities make it difficult for me to:***

CBSM293. Keep a diary of my daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBSM294. Weigh myself once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

BCS – behavioral control strength BBS – behavioral belief strength BI – behavior intention CB – control beliefs
DAS – direct attitude scale DNB – descriptive normative beliefs DPC – direct perceived control
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***If I were tired or unmotivated it would be more difficult for me to:***

CBSM351. Keep a diary of my daily diet and physical activity.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

CBSM296. Weigh myself once a week.

disagree: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: agree

***Over the last month, I have:***

PBSM297. Kept a diary of my daily diet and physical activity.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

PBSM298. Weighed myself once a week.

very rarely: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:very frequently

BCS – behavioral control strength BBS – behavioral belief strength BI – behavior intention CB – control beliefs
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**Appendix B. QAS-99 Code Book for Principle Investigator Review**

READING: Determine if it is difficult for the respondents to read the questions

1a. WHAT TO READ: Respondent may have difficulty determining what parts of the question should be read.

1b. MISSING INFORMATION: Information the respondent needs to answer the questionnaire is not contained in the directions.

1c. HOW TO READ: Question is not fully scripted and is difficult to read.

INSTRUCTIONS: Look for problems with any introductions, instructions, or explanations from the respondent's point of view.

2a. CONFLICTING OR INACCURATE INSTRUCTIONS, introductions, or explanations.

2b. COMPLICATED INSTRUCTIONS, introductions, or explanations.

CLARITY: Identify problems related to understanding the intent or meaning of the questions.

3a. WORDING: Question is lengthy, awkward, ungrammatical or contains complicated syntax.

3b. TECHNICAL TERMS are undefined, unclear or complex.

3c. VAGUE: There are multiple ways to interpret the question or to decide what is to be included or excluded.

3d. REFERENCE PERIODS are missing, not well specified or in conflict.

ASSUMPTIONS: Determine if there are problems with assumptions made or the underlying logic.

4a. INNAPROPRIATE ASSUMPTIONS are made about the respondent or about her living situation.

4b. ASSUMES CONSTANT BEHAVIOR or experience for situations that vary.

4c. DOUBLE-BARRELED: Contains more than one implicit question.

KNOWLEDGE/MEMORY: Check whether respondents are likely to not know or have trouble remembering information.

5a. KNOWLEDGE may not exist: Respondent is unlikely to know the answer to a factual question.

5b. ATTITUDE may not exist: Respondent is unlikely to have formed the attitude being asked about.

5c. RECALL failure: Respondent may not remember the information asked for.

5d. COMPUTATION problem: the question requires a difficult mental calculation.

SENSITIVITY/BIAS: Assess questions for sensitive nature or wording and for bias.

6a. SENSITIVE CONTENT (general): The question asks about a topic that is embarrassing, very private or that involves illegal behavior.

6b. SENSITIVE WORDING (sensitive): Given that the general topic is sensitive, the wording should be improved to minimize sensitivity.

6c. SOCIALLY ACCEPTABLE response is implied by the question.

RESPONSE CATEGORIES: Assess the adequacy of the range of responses to be recorded.

7a. OPEN-ENDED QUESTION that is inappropriate or difficult.

7b. MISMATCH between question and response categories.

7c. TECHNICAL TERM(S) are undefined, unclear or complex.

7d. VAUGE response categories are subject to multiple interpretations.

7e. OVERLAPPING response categories.

7f. MISSING eligible responses in response categories.

7g. ILLOGICAL ORDER of response categories.

**Appendix C. Letter of Invitation for Expert Review and Expert Qualifications**

Good *Morning/Afternoon/Evening*,

I am developing and pretesting a theoretically-grounded questionnaire to measure biopsychosocial variables of weight management behaviors in overweight and obese African American females. Research demonstrates that weight management interventions are less successful in meeting the needs of overweight and obese African American women when compared to their white counterparts, resulting in poor adherence, less weight loss and failure to maintain weight loss. Interventions should target the needs of specific groups and be tailored to meet individual, cultural and socioeconomic conditions. I used the Integrated Behavioral Model to frame the development of a questionnaire measuring attitudes, beliefs and post-intention variables related to weight management behaviors of diet, physical activity and self-monitoring identified through dimensional analysis of weight management in overweight and obese African American females. The purpose of the questionnaire is to identify the needs of African American women who may want to improve their health through weight management.

I would like to invite you to serve as a content expert on the content validity review panel. The review panel will consist of four community members who are similar to the sample population and three content experts with demonstrated research expertise in weight management of overweight and obese African American females. You are asked to participate because of *(list qualifications)*. Your input in the content validity process would be a valuable contribution to the development of this questionnaire, which is a preliminary step in my research career.

The questionnaire consists of approximately 180 items that measure variables affecting diet, physical activity and self-monitoring behaviors. It is presented as an online survey through Research Electronic Data Capture (REDCap) and should take 60 to 90 minutes to complete. I am requesting that you complete the survey by *(two weeks after emailing request)*. The survey does not need to be completed in one sitting, but can be saved and accessed multiple times. Content validity will be assessed using a four-point ratings scale ranging from *not relevant* to *highly relevant*. General information and reviewer instructions will be available on the REDCap survey site.

Thank you for your consideration,

Sincerely,

Suzanne M. Sutton, MSN
Doctoral Student
College of Nursing, Medical University of South Carolina
sms38@ musc.edu

Expert qualifications:

1. Doctorally prepared
2. Research interest in:
    a. Minority health, specifically AA
    b. Obesity reduction/weight management
    c. Behavioral change
3. At least 3 published research articles in last 10 years with focus on WM, AAF (1st or 2nd author)

Not required, but important:

1. Experience with questionnaire development/psychometrics
2. Not geographically limited

**Appendix D. Survey Used for Content Validity Index**

# CVI Expert Survey

Please complete the survey below. Directions for completing the items are included within the body of the survey.

Thank you!

EXPERT REVIEW OF CONTENT VALIDITY

The overall purpose of this survey is for participants to rate how well each item measures attitudes and beliefs that determine weight management behaviors. The survey consists of three sections based on defined weight management behaviors and a fourth subsection based on attitudes towards potential outcomes of weight management behaviors.

GENERAL DIRECTIONS: A definition of each weight management behavior will be provided at the beginning of each subsection.

PANEL REVIEW: Please review the definition and then read each question. Rate each item according to RELEVANCE using the following scale:

Not relevant
Somewhat relevant
Quite relevant
Highly relevant

There are no wrong answers, as this survey seeks panel members' opinions of relevancy.

Please consider each item carefully. At the end of each section, participants will be asked to recommend changes to wording or additional items.

1) Please identify any problems with the description of the survey or directions for completion.

_____

DIETARY BEHAVIORS: Each question in this section refers to eating a healthy diet that limits sugars, fats and calories, while increasing fruits and vegetables.1. Eating 4 - 5 servings of fruits and vegetables daily.2. Limiting daily caloric intake to a prescribed amount.3. Limiting daily intake of fats to a prescribed amount.4. Limiting daily intake of sugary drinks to a prescribed amount.

INDIRECT MEASURE OF ATTITUDE: This section asks about your attitudes towards performing the behavior.

PANEL REVIEW: Please consider the relevance of each pair of adjectives to your attitude towards each behavior.

FOR EXAMPLE: When considering your dietary behaviors, how relevant is it if limiting your caloric intake is pleasant or unpleasant? Or, how relevant is it if limiting your fat intake is healthy or unhealthy?

2) My consuming 4 - 5 servings of fruits and vegetables each day would be:

unpleasant:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:pleasant

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

3) My consuming 4 - 5 servings of fruits and vegetables each day would be:

harmful:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:beneficial

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

4) My consuming 4 - 5 servings of fruits and vegetables each day would be:

satisfying:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unsatisfying

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

5) My consuming 4 - 5 servings of fruits and vegetables each day would be:

healthy: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unhealthy

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

6) Limiting my daily caloric intake to a prescribed amount would be:

unpleasant:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:pleasant

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

7) Limiting my daily caloric intake to a prescribed amount would be:

harmful:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:beneficial

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

8) Limiting my daily caloric intake to a prescribed amount would be:

satisfying:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unsatisfying

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

9) Limiting my daily caloric intake to a prescribed amount would be:

healthy:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unhealthy

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

10) Limiting my daily intake of fats to a prescribed amount would be:

unpleasant:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:pleasant

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

11) Limiting my daily intake of fats to a prescribed amount would be:

harmful:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:beneficial

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

12) Limiting my daily intake of fats to a prescribed amount would be:

satisfying:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unsatisfying

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

13) Limiting my daily intake of fats to a prescribed amount would be:

healthy:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unhealthy

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

14) Limiting my daily intake of sugary drinks to a prescribed amount would be:

unpleasant:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:pleasant

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

15) Limiting my daily intake of sugary drinks to a prescribed amount would be:

harmful:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:beneficial

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

16) Limiting my daily intake of sugary drinks to a prescribed amount would be:

satisfying:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unsatisfying

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

17) Limiting my daily intake of sugary drinks to a prescribed amount would be:

healthy:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unhealthy

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

MEASURE OF ATTITUDE: This section measures indirect attitudes towards these behavior and the advantages of performing the defined behavior. PANEL REVIEW: Please consider the relevance of each advantage towards your performance of the defined behavior.

18) If I consume 4 - 5 servings of fruits and vegetables each day, my health will improve.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

19) If I consume 4 - 5 servings of fruits and vegetables each day, I will feel better.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

20) If I consume 4 - 5 servings of fruits and vegetables each day, I will be more physically fit.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

21) If I consume 4 - 5 servings of fruits and vegetables each day, I will lose weight.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

22) If I limit my daily caloric intake to a prescribed amount, my health will improve.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

23) If I limit my daily caloric intake to a prescribed amount, I will feel better.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

24) If I limit my daily caloric intake to a prescribed amount, I will be more physically fit.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

25) If I limit my daily caloric intake to a prescribed amount, I will lose weight.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

26) If I limit my daily fat intake to a prescribed amount, my health will improve.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

27) If I limit my daily fat intake to a prescribed amount, I will feel better.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

28) If I limit my daily fat intake to a prescribed amount, I will be more physically fit.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

29) If I limit my daily fat intake to a prescribed amount, I will lose weight.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

30) If I limit my intake of sugary drinks to a prescribed amount, my health will improve.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

31) If I limit my intake of sugary drinks to a prescribed amount, I will feel better.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

32) If I limit my intake of sugary drinks to a prescribed amount, I will be more physically fit.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

33) If I limit my intake of sugary drinks to a prescribed amount, I will lose weight.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

INDIRECT MEASURE OF INJUNCTIVE SOCIAL NORMS: This section asks about the effect of specific sources of social pressure on your performance of the defined behavior.

PANEL REVIEW: Please consider the relevance of the identified individual's or group's approval or disapproval ON YOUR PERFORMANCE OF THE BEHAVIOR.

34) Members of my family think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

eat 4 - 5 servings of fruits and vegetables each day.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

35) My close friends think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

eat 4 - 5 servings of fruits and vegetables each day.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

36) My health care providers think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

eat 4 - 5 servings of fruits and vegetables each day.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

37) My spiritual leaders think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

eat 4 - 5 servings of fruits and vegetables each day.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

38) Members of my family think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

limit my daily intake of calories to a prescribed amount.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

39) My close friends think I

should not: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

limit my daily intake of calories to a prescribed amount.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

40) My health care providers think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

limit my daily intake of calories to a prescribed amount.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

41) My spiritual leaders think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

limit my daily intake of calories to a prescribed amount.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

42) Members of my family think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

limit my daily intake of fats to a prescribed amount.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

43) My close friends think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

limit my daily intake of fats to a prescribed amount.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

44) My health care providers think I

should not:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:should

limit my daily intake of fats to a prescribed amount.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

45) My spiritual leaders think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

limit my daily intake of fats to a prescribed amount.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

46) Members of my family think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

limit my daily intake of sugary drinks to a prescribed amount.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

47) My close friends think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

limit my daily intake of sugary drinks to a prescribed amount.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

48) My health care providers think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

limit my daily intake of sugary drinks to a prescribed amount.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

49) My spiritual leaders think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

limit my daily intake of sugary drinks to a prescribed amount.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

INDIRECT MEASURE OF BEHAVIOR CONTROL  This section asks about how much circumstances effect your performance of the behavior.PANEL REVIEW:  Please consider the relevance of each circumstance to your ability to perform the behavior.

50) Strong emotions would make it difficult for me to:

Consume 4 - 5 servings of fruits or vegetables daily.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:  strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

51) Strong emotions would make it difficult for me to:

Limit my daily caloric intake to a prescribed amount.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:  strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

52) Strong emotions would make it difficult for me to:

Limit my daily fat intake to a prescribed amount.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

53) Strong emotions would make it difficult for me to:

Limit my daily intake of sugary drinks to a prescribed amount.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

54) The easy availability and affordability of unhealthy food choices would make it difficult for me to:

Consume 4 - 5 servings of fruits or vegetables daily.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

55) The easy availability and affordability of unhealthy food choices would make it difficult for me to:

Limit my daily caloric intake to a prescribed amount.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

56) The easy availability and affordability of unhealthy food choices would make it difficult for me to:

Limit my daily fat intake to a prescribed amount.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

57) The easy availability and affordability of unhealthy food choices would make it difficult for me to:

Limit my daily intake of sugary drinks to a prescribed amount.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

58) If I were tired it would make it difficult for me to:

Consume 4 - 5 servings of fruits or vegetables daily.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

59) If I were tired it would make it difficult for me to:

Limit my daily caloric intake to a prescribed amount.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

60) If I were tired it would make it difficult for me to:

Limit my daily fat intake to a prescribed amount.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

61) If I were tired it would make it difficult for me to:

Limit my daily intake of sugary drinks to a prescribed amount..

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

62) Other responsibilities would make it difficult for me to:

Consume 4 - 5 servings of fruits or vegetables daily.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

63) Other responsibilities would make it difficult for me to:

Limit my daily caloric intake to a prescribed amount.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

64) Other responsibilities would make it difficult for me to:

Limit my daily fat intake to a prescribed amount.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

65) Other responsibilities would make it difficult for me to:

Limit my daily intake of sugary drinks to a prescribed amount.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

POWER OF FACTORS TO INFLUENCE BEHAVIOR: This section asks about the power of factors on your performance of the defined behavior.

PANEL REVIEW: Consider the relevance of each factor on how likely you are to perform the behavior.

66) When I am emotional, I would be

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to eat 4 - 5 servings of fruits and vegetables daily

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

67) The easy availability and affordability of unhealthy food choices would make it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to eat 4 - 5 servings of fruits and vegetables daily

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

68) Being tired makes it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to eat 4 - 5 servings of fruits and vegetables daily

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

69) My other responsibilities make it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to eat 4 - 5 servings of fruits and vegetables daily

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

70) When I am emotional, I would be

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to limit my daily caloric intake to a prescribed amount

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

71) The easy availability and affordability of unhealthy food choices makes it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to limit my daily caloric intake to a prescribed amount

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

72) Being tired makes it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to limit my daily caloric intake to a prescribed amount

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

73) When I am emotional, I am

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to limit my daily fat intake to a prescribed amount

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

74) The easy availability and affordability of unhealthy food choices makes it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to limit my daily fat intake to a prescribed amount

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

75) Being tired makes it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to limit my daily fat intake to a prescribed amount

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

76) My other responsibilities make it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to limit my daily fat intake to a prescribed amount

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

77) When I am emotional, I am

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to limit my daily intake of sugary drinks to a prescribed amount

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

78) The easy availability and affordability of unhealthy food choices makes it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to limit my daily intake of sugary drinks to a prescribed amount

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

79) Being tired makes it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to limit my daily intake of sugary drinks to a prescribed amount

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

80) My other responsibilities make it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to limit my daily intake of sugary drinks to a prescribed amount

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

POST-INTENTION VARIABLES: This section acts if certain factors prevent you from performing the defined behavior, if you wanted to do it.

PANEL REVIEW: Please consider the relevance of each factor in preventing you performance of the behavior. Consider the relevance of each factor as a barrier to your performance of the behavior.

81) I don't know where fresh fruits and vegetables are available.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

82) I don't know how to prepare fresh fruits and vegetable to eat.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

83) It is difficult for me to obtain fresh fruits and vegetables where I live.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

84) I do not know how to count calories.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

85) I do not know how to count fat content.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

PHYSICAL ACTIVITY BEHAVIORS: Each question in this section refers to physical activity behaviors, including aerobic activity, muscle strengthening activities and decreasing sedentary behaviors.1. 150 minutes of moderately-intense aerobic activity per week2. Muscle strengthening actvities twice weekly.3. Decreasing the amount of time spent watching television or playing video games each week.

INDIRECT MEASURE OF ATTITUDE: DIRECT MEASURE OF ATTITUDE: This section asks about your attitudes towards performing the behavior.

PANEL REVIEW: Please consider the relevance of each pair of adjectives to your attitude towards each behavior.

86) Participating in 150 minutes of moderately-intense physical activity each week would be:

unpleasant: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:pleasant

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

87) Participating in 150 minutes of moderately-intense physical activity each week would be:

harmful: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:beneficial

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

88) Participating in 150 minutes of moderately-intense physical activity each week would be:

satisfying: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unsatisfying

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

89) Participating in 150 minutes of moderately-intense physical activity each week would be:

healthy: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unhealthy

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

90) Participating in muscle strengthening activities two days a week would be:

unpleasant:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:pleasant

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

91) Participating in muscle strengthening activities two days a week would be:

harmful: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:beneficial

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

92) Participating in muscle strengthening activities two days a week would be:

satisfying: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unsatisfying

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

93) Participating in muscle strengthening activities two days a week would be:

healthy: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unhealthy

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

94) Decreasing the amount of time I spend watching TV or playing video games would be:

unpleasant:___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:pleasant

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

95) Decreasing the amount of time I spend watching TV or playing video games would be:

harmful: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:beneficial

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

96) Decreasing the amount of time I spend watching TV or playing video games would be:

satisfying: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unsatisfying

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

97) Decreasing the amount of time I spend watching TV or playing video games would be:

healthy: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unhealthy

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

MEASURE OF ATTITUDE: This section measures indirect attitudes towards these behavior and the advantages of performing the defined behavior. PANEL REVIEW: Please consider the relevance of each advantage towards your performance of the defined behavior.

98) If I participate in 150 minutes of moderately-intense physical activity weekly, my health will improve.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

99) If I participate in 150 minutes of moderately-intense physical activity weekly, I will be more physically fit.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

100) If I participate in 150 minutes of moderately-intense physical activity weekly, I will be more physically fit.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

101) If I participate in muscle strengthening activity 2 times weekly, my health will improve.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

102) If I participate in muscle strengthening activity 2 times weekly, I will be more physically fit.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

103) If I participate in muscle strengthening activity 2 times weekly, I will lose weight.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

104) If I decrease the amount of item I spend watching TV or playing video games, my health will improve.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

105) If I decrease the amount of item I spend watching TV or playing video games, I will be more physically fit.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

106) If I decrease the amount of item I spend watching TV or playing video games, I will lose weight.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

INDIRECT MEASURE OF INJUNCTIVE SOCIAL NORMS:  This section asks about the effect of specific sources of social pressure on your performance of the defined behavior.PANEL REVIEW:  Please consider the relevance of the identified individual's or group's approval or disapproval on your performance of the behavior.

107) Members of my family think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

participate in 150 minutes of moderately-intense physical activity weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

108) My close friends think I

should not: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

participate in 150 minutes of moderately-intense physical activity weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

109) My health care providers think I

should not: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

participate in 150 minutes of moderately-intense physical activity weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

110) My spiritual leaders think I

should not: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

participate in 150 minutes of moderately-intense physical activity weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

111) Members of my family think I

should not: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

participate in muscle strengthening activity two times weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

112) My close friends think I

should not: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

participate in muscle strengthening activity two times weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

113) My health care providers think I

should not: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

participate in muscle strengthening activity two times weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

114) My spiritual leaders think I

should not: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

participate in muscle strengthening activity two times weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

115) Members of my family think I

should not: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

decrease the amount of time I spend watching TV or playing video games

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

116) My close friends think I

should not: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

decrease the amount of time I spend watching TV or playing video games.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

117) My health care providers think I

should not: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:should

decrease the amount of time I spend watching TV or playing video games

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

118) My spiritual leaders think I

should not: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

decrease the amount of time I spend watching TV or playing video games

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

INDIRECT MEASURE OF BEHAVIOR CONTROL  This section asks about how much circumstances effect your performance of the behavior.PANEL REVIEW:  Please consider the relevance of each factor on your ability to perform the behavior.

119) Strong emotions would make it difficult for me to:

Participate in 150 minutes of moderately-intense aerobic activity weekly

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

120) Strong emotions would make it difficult for me to:

Participate in muscle strengthening activities 2 times weekly.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

121) Strong emotions would make it difficult for me to:

Limit the amount of time I spend watching TV or playing video games.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

122) Other responsibilities would make it difficult for me to:

Participate in 150 minutes of moderately-intense aerobic activity weekly

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

123) Other responsibilities would make it difficult for me to:

Participate in muscle strengthening activities 2 times weekly.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

124) If I were tired it would make it difficult for me to:

Participate in 150 minutes of moderately-intense aerobic activity weekly

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

125) If I were tired it would make it difficult for me to:

Participate in muscle strengthening activities 2 times weekly.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

126) If I were tired it would make it difficult for me to:

Limit the amount of time I spend watching TV or playing video games.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

127) If I had easy access to gyms or other recreational areas to exercise I would:

Participate in 150 minutes of moderately-intense aerobic activity weekly

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

128) If I had easy access to gyms or other recreational areas to exercise I would:

Participate in muscle strengthening activities 2 times weekly.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

129) If I had easy access to gyms or other recreational areas to exercise I would:

Limit the amount of time I spend watching TV or playing video games.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

POWER OF FACTORS TO INFLUENCE BEHAVIOR:  This section asks about the power of  factors on your performance of the defined behavior.PANEL REVIEW:  Consider the relevance of each factor on your performance of the behavior.

130) When I am emotional, I would be

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to participate in 150 minutes of moderately-intense aerobic activity weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

131) My other responsibilities would make it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

for me to participate in 150 minutes of moderately-intense aerobic activity weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

132) Being tired would make it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

for me to participate in 150 minutes of moderately-intense aerobic activity weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

133) If I had easy access to gyms or recreational facilities to exercise, I would be

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to participate in 150 minutes of moderately-intense aerobic activity weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

134) When I am emotional, I am

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to participate in muscle strengthening activities 2 times weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

135) Other responsibilities would make

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

for me to participate in muscle strengthening activities 2 times weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

136) If I were tired, I would be

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to participate in muscle strengthening activities 2 times weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

137) If I had easy access to gyms or recreational facilities to exercise, I would be

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to participate in muscle strengthening activities 2 times weekly

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

138) When I am emotional, I am

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to limit the time I spend watching TV or playing video games

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

139) If I were tired I would be

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to limit the time I spend watching TV or playing video games

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

140) If I had easy access to gyms or recreational facilities to exercise, I would be

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

limit the time I spend watching TV or playing video games

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

POST-INTENTION VARIABLES:  This section acts  if certain factors prevent you from performing the defined behavior, if you wanted to do it.PANEL REVIEW:  Please consider the relevance of each factor in preventing you performance of the behavior.

141) I don't know how moderately-intense aerobic activity is defined.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

142) I don't know if I am capable of performing 150 minutes moderately-intense aerobic activity weekly..

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

143) My neighborhood environment would make it easy for me to participate in 150 minutes of moderately-intense aerobic activity weekly.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

144) I don't know how to do muscle strengthening activities.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

145) I don't know if I am capable of performing muscle strengthening activities 2 days weekly.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

146) There are places for me to participate in muscle strengthening activity 2 days weekly

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

SELF MONITORING BEHAVIORS: Each question in this section refers to self-monitoring of your diet, physical activity and weight.1. Tracking diet and physical activity daily.2. Weighing once a week

DIRECT MEASURE OF ATTITUDE: This section asks about hat your attitudes towards performing the defined behaviors. PANEL REVIEW: Please consider the relevance of each pair of adjectives to your attitude towards each behavior.

147) My tracking my diet and physical activity daily would be:

unpleasant: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:pleasant

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

148) My tracking my diet and physical activity daily would be:

important: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:not important

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

149) My tracking my diet and physical activity daily would be:

satisfying: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unsatisfying

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

150) My tracking my diet and physical activity daily would be:

useless: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:useful

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

151) My weighing myself at least once a week would be

unpleasant: : ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:pleasant

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

152) My weighing myself at least once a week would be

important: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:not important

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

153) My weighing myself at least once a week would be:

satisfying: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:unsatisfying

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

154) My weighing myself at least once a week would be:

useless: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:useful

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

MEASURE OF ATTITUDE: This section measures indirect attitudes towards these behavior and the advantages of performing the defined behavior. PANEL REVIEW: Please consider the relevance of each advantage towards your performance of the defined behavior.

155) If I monitor my diet and physical activity daily, my health will improve.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

156) If I monitor my diet and physical activity daily, I will feel better.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

157) If I monitor my diet and physical activity daily, I will be more physically fit.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

158) If I monitor my diet and physical activity daily, I will lose weight.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

159) If I weigh myself weekly at least one time weekly, my health will improve.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

160) If I weigh myself at least one time weekly, I will feel better.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

161) If I weigh myself at least one time weekly, I will be more physically fit.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

162) If I weigh myself weekly, I will lose weight.

unlikely: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:likely

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

INDIRECT MEASURE OF INJUNCTIVE SOCIAL NORMS:  This section asks about the effect of specific sources of social pressure on your performance of the defined behavior.PANEL REVIEW:  Please consider the relevance of the identified individual's or group's approval or disapproval on your performance of the behavior

163) Members of my family think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

monitor my diet and physical activity daily.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

164) My close friends think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

monitor my diet and physical activity daily.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

165) My health care providers think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

monitor my diet and physical activity daily.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

166) My spiritual leaders think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

monitor my diet and physical activity daily.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

167) Members of my family think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

weigh myself at least one time weekly.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

168) My close friends think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

weigh myself at least one time weekly.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

169) My health care providers think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

weigh myself at least one time weekly.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

170) My spiritual leaders think I

should not:___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:should

weigh myself at least one time weekly.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

INDIRECT MEASURE OF BEHAVIOR CONTROL  This section asks about how much circumstances effect your performance of the behavior.PANEL REVIEW:  Please consider the relevance of each circumstance to your ability to perform the behavior.

171) Strong emotions would make it difficult for me to:

Monitor my diet and physical activity daily.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:  strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

172) Strong emotions would make it difficult for me to:

Weigh myself at least one time weekly.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

173) If I were tired it would make it difficult for me to:

Monitor my diet and physical activity daily.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

174) If I were tired it would make it difficult for me to:

Weigh myself at least one time weekly.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

175) Other responsibilities would make it difficult for me to:

Monitor my diet and physical activity daily.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

176) Other responsibilities would make it difficult for me to:

Weigh myself at least one time weekly.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

POWER OF FACTORS TO INFLUENCE BEHAVIOR: This section asks about the power of outside factors on your performance of the defined behavior.PANEL REVIEW: Consider the relevance of each factor on your performance of the behavior.

177) When I am emotional, I would be

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to monitor my diet and physical activity daily.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

178) If I were tired, I would be

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to monitor my diet and physical activity daily.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

179) My other responsibilities would make me

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to monitor my diet and physical activity daily.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

180) When I am emotional, I would be

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to weigh myself at least one time a week.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

181) When I am tired, I would be

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to weigh myself at least one time a week.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

182) Other responsibilities would make it

less likely: ___-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__: more likely

to weigh myself at least one time a week.

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

POST-INTENTION VARIABLES:  This section acts  if certain factors prevent you from performing the defined behavior, if you wanted to do it.PANEL REVIEW:  Please consider the relevance of each factor in preventing you performance of the behavior.

183) I don't know how to count calories in order to monitor my intake.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__:  strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

184) I don't know how to count fat grams in order to monitor my intake.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

185) I don't have a way to track my diet and physical activity.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

186) I do not have a way to weight myself.

strongly disagree: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__: strongly agree

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

MOTIVATION TO COMPLY: This section measures the strength of influence each individual or group has on your motivation to perform with defined behaviors. PANEL REVIEW: Please consider the relevance of each group on your motivation to perform the behaviors.

187) When it comes to matter of weight related behaviors, how much does the opinion of your friends matter?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__ : very much

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

188) When it comes to matter of weight related behaviors, how much does the opinion of your family matter?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__ : very much

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

189) When it comes to matter of related behaviors, how much does the opinion of your health care providers mean?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__ : very much

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

190) When it comes to matters of weight related behaviors, how much does the opinion of your spiritual leaders matter?

not at all: ___1__| ___2__| ___3__| ___4__|___5__|___6__|___7__ : very much

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

OUTCOME EVALUTION: This section asks questions about your attitude towards potential outcomes of the behaviors.PANEL REVIEW: Please consider the relevance of potential outcomes and the attitudes towards them.

191) Improving my health is:

extremely undesirable: __-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:extremely desirable

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

192) Feeling better is:

extremely undesirable: __-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:extremely desirable

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

193) Improving my physical fitness is:

extremely undesirable: __-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:extremely desirable

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

194) Losing weight is:

extremely undesirable: __-3__| ___-2__| ___-1__| ___0__|___1__|___2__|___3__:extremely desirable

◯ not relevant
◯ somewhat relevant
◯ quite relevant
◯ highly relevant

195) Thank you for completing this survey. Your time and input is appreciated. Please record your name and address here in order to receive your gift card. _____

**Appendix E. Recruitment Advertisement for Cognitive Interviewing**

# Decreasing Health Risks in African-American Women

Be a part of an important research study on weight management behaviors.

- Are you an African-American women 21 years of age or older?
- Are you considered overweight by health standards?

If you answered yes to these questions, you may be able to participate in a weight management behaviors study.

The purpose of this research is to develop a questionnaire that will identify the needs of African-American women who may want to improve their health through weight management.

Volunteers are needed to complete a survey and participate in one-on-one interviews. Volunteers who complete the survey and interviews will receive a $25 gift card.

If you would like to participate, please complete the screening survey.

Stat the survey by following the steps below:

1. Go to this web address: https://redcap.musc.edu/surveys/

2. Then enter the access code: HX4WPFYXC

Alternatively, if you have a device that has an app capable of reading QR codes, you may scan the QR code below, which should take you directly to the survey in a web browser.

The survey can be completed using most devices with internet access.

For further information please contact:
Suzanne Sutton, MSN (doctoral student)
sms38@musc.edu
864-503-5497

# Recruitment and Screening Survey CI

Please complete the survey below.

Thank you!

---

**The purpose of this research is to develop a questionnaire that will identify the needs of African-American women who may want to improve their health through weight management. We are testing a new survey about attitudes and towards weight management in a specific population.**

**Ten qualifying volunteers will complete a survey and participate in one-on-one interviews. These participants will receive an incentive payment in the form of a gift card.**

**If you are interested, please fill out the screening survey. Qualifying volunteers will be contacted by a research team member.**

**Thank you for considering helping us test our survey questions.**

| | | |
|---|---|---|
| 1) | Date of birth | _____ |
| 2) | I consider myself to be African-American | ◯ True<br>◯ False |
| 3) | I am female. | ◯ True<br>◯ False |
| 4) | I am considered to be overweight or obese by the federal government | ◯ True<br>◯ False |
| 5) | I am currently trying to lose weight. | ◯ True<br>◯ False |
| 6) | I have had surgery to help me lose weight. | ◯ True<br>◯ False |
| 7) | By checking this box, I certify that I am at least 21 years old and that I give my consent freely to participant in this study. | ☐ I consent |
| 8) | Please provide a primary contact number | _____ |
| 9) | The best time to contact me is (more than one answer is allowed): | ☐ 8 AM - 11 AM<br>☐ 11 AM - 2 PM<br>☐ 2 PM - 6 PM<br>☐ 6 PM - 9 PM |

## Appendix G. Screening Telephone Script for CI Participants

Hello, this is Suzanne Sutton from the Medical University of South Carolina. I would like to speak with _____ about a research study she may be eligible to participate in.

**If response is she is not available,** "Thank you. Is there a convenient time that I could call her back?"

**If no one answers,** "This is Suzanne Sutton from the Medical University of South Carolina. I am calling to see if _____ is interested in participating in a research study. If so, please call me back at 864-504-5497. Thank you."

**If response is "This is she."** I would like to provide you with some basic information about the study and ask you 6 questions in order to determine if you may be eligible for this study. At any time you may decline to answer or you can stop our conversation all together.

Would you like to hear more about study?
**If no,** Thank you for your time.
**If yes,** Thank you. The purpose of this research is to develop a questionnaire that will identify the needs of African-American women who may want to improve their health through weight management. We are testing a new survey about attitudes and beliefs about weight management in a specific population. If you are eligible, your participation in the research will include completing a survey and a one-on-one interview and will last approximately _____ hours. The interview would take place at a time and location convenient to you. If you complete the interview process, you will receive a ____ gift card for your time.

Would you like to continue?
**If not**, Thank you for your time.
**If yes**, Thank you. This will take about 5 minutes. First, I need to confirm that you are eligible to participate in the survey. You do not have to answer any question you do not wish to and you may stop at any time. Your participation is completely voluntary. In addition, your answers will be confidential.

Would you like to continue?
**If no,** Thank you for your time.
**If yes**, Thank you.

1. Do you consider yourself to be African-American or black?
   **If not,** I'm sorry, but this study only involves African-American females. Thank you for your time.

2. How old are you?
   **If not 21 yo**, I'm sorry, but you must be 21 years old in order to participate in this study. Thank you for your time.

3. I need to determine if you are overweight or obese by medical and federal standards.
   How much you weigh?
   How tall are you? BMI Calculation wt/ht X 703 =

   **If BMI is < 25,** I'm sorry, but you do not weight enough to participate in this study. Thank you for your time.

4. Have you had surgery to help you lose weight?

**If yes,** I'm sorry, but having weight loss surgery disqualifies you from participating in this study. Thank you for your time.

**If the participant meets eligibility criteria**, Great, you are eligible to participate in the study. Are you interested in setting up a time and place to complete the interview?
**If no**, Thank you for your time.
**If yes,** There are several dates and times available for you to schedule your appointment; the only times not available are Monday afternoons and all dayTuesdays.

**Let participant choose a date and time.**

Where would you like to meet? I also work at the University of South Carolina Upstate and have interview spaces on the Spartanburg campus and at the University Center in Greenville. We could also meet at your home or place of business.

**Once appointment is set**, Thank you. You will receive a reminder call or email the day before your appointment. If you are unable to make your appointment or need to change it, please call me at: 864-503-5497. Do you have any questions?

**If no**, Thank you so much for your time. I look forward to meeting you.

## Appendix H. CI Survey Introduction and Interview Probes

*This guide accompanies the Cognitive Interviewing Survey for the Behavioral Weight Management Questions for Overweight/Obese African American Females. Respondents also have a short introduction they will read on their own that includes information about the survey and cognitive interviewing, definitions of dietary, physical activity and self-monitoring behaviors and directions for completing the survey. Please read the following to the participants before they read the introduction and start the survey.*

INTRODUCTION

Good morning, afternoon, evening Mrs., Ms., Miss_____

My name is Suzanne Sutton. I am a doctoral (PhD) student in the College of Nursing at the Medical University of South Carolina working on a research project for my dissertation. Thank you for agreeing to help test our survey questions.

I am testing a newly developed survey about beliefs and attitudes towards weight management. Your answers to these questions are important. However, for this project I am testing the instructions and questions and want to understand how you answer the questions.

The survey has 6 sections. The first section asks about information, like age, height, weight and where you live. The remaining sections ask questions about attitudes and beliefs towards diet, physical activity and self-monitoring.

This is a self-administered survey, participants read the survey and answer the questions on their own. After you complete each section, you will then be asked some specific questions about the survey instructions, wording of the questions, and response choices (answers).

I am interested in any thoughts you had while answering the questions. I am also interested in all your opinions; everything you believe is important. Please feel free to make notes on the survey.

I am interested in your thoughts about the instructions provided **and** the questions as written, for example:

1. Do the instructions and/or question(s) make sense? Is the information presently clearly?
2. Did you have to re-read any questions? Which ones?
3. Do the questions apply to you?
4. Are they easy to read?
5. Did you find any of the questions hard to answer?
6. How did you decide on your answers?
7. Did you find any of the questions uncomfortable? If, so which ones and can you tell me more?
8. How might the instructions be improved?
9. How might the question(s) be improved?
10. Anything else that you may want to share– so, please, give any feedback or opinions you have.

SPECIFIC PROBES FOR SECTION 1 ***[DO NOT READ ALOUD]***

1. What do you think is the purpose of the survey?
2. What do you think "weight management behaviors" means?
3. Are the definitions of dietary behaviors, physical activity behaviors and self monitoring behaviors clear or confusing? ***(Pause for response)***

   ***[If "confusing" use the following probes as appropriate]***

   **Tell me more….**

   **What specific parts were confusing?**

   **How would you make it more clear?**
4. Did you find any problems answering the questions in section 1?
   a. What kind of problems?
   b. Did all the questions have an answer that applies to you?
   c. Did more than one answer fit any of the questions?

   ***[Use follow up probes as needed]:***

   **Tell me more…**

   **What else should be included?**

   **How do you think the answer choices could be improved?**
5. Do you have any suggestions on ways to improve: ***(ask about each of the following separately):***
   a. The introduction?
   b. Definitions?
   c. Instructions?
   d. Questions?

   **Please be as specific as possible**

SPECIFIC PROBES FOR SECTION 2 ***[DO NOT READ ALOUD]***

1. Are the questions in this section clear or confusing?

   **[*If the respondent answers confusing]:***

   **Tell me more….**

   **Which specific questions are confusing?**
2. Did you have any trouble answering the questions in section 2?

   ***[Use follow up probes as needed]:***

   **Tell me more…**

   **What kind of problems?**

   **How did you determine your answers?**
3. Do you have any suggestions on ways to improve the questions?

SPECIFIC PROBES FOR SECTION 3 ***[DO NOT READ ALOUD]***

1. Are the questions in this section clear or confusing?

   **[*If the respondent answers confusing]:***

   **Tell me more….**

   **Which specific questions are confusing?**
2. Did you have any trouble answering the questions in section 3?

   ***[Use follow up probes as needed]:***

   **Tell me more…**

   **What kind of problems?**

   **How did you determine your answers?**
3. Do you have any suggestions on ways to improve the questions?
4. Can you think of any advantages of performing the behaviors that are not covered in the survey questions?

SPECIFIC PROBES FOR SECTION 4 ***[DO NOT READ ALOUD]***

1. Are the questions in this section clear or confusing?
   **[*If the respondent answers confusing]:***
   **Tell me more….**
   **Which specific questions are confusing?**
2. Did you have any trouble answering the questions in section 4?
   ***[Use follow up probes as needed]:***
   **Tell me more…**
   **What kind of problems?**
   **How did you determine your answers?**
3. Do you have any suggestions on ways to improve the questions?
4. What other individuals or groups that might influence your behaviors?

SPECIFIC PROBES FOR SECTION 5 ***[DO NOT READ ALOUD]***

1. Are the questions in this section clear or confusing?
   **[*If the respondent answers confusing]:***
   **Tell me more….**
   **Which specific questions are confusing?**
2. Did you have any trouble answering the questions in section 5?
   ***[Use follow up probes as needed]:***
   **Tell me more…**
   **What kind of problems?**
   **How did you determine your answers**?
3. Do you have any suggestions on ways to improve the questions?
4. Are there other circumstances, not covered in the survey, that might influence your behaviors?

SPECIFIC PROBES FOR SECTION 6 ***[DO NOT READ ALOUD]***

1. Are the questions in this section clear or confusing?
   **[*If the respondent answers confusing]:***
   **Tell me more….**
   **Which specific questions are confusing?**
2. Did you have any trouble answering the questions in section 6?
   ***[Use follow up probes as needed]:***
   **Tell me more…**
   **What kind of problems?**
   **How did you determine your answers?**
3. Do you have any suggestions on ways to improve the questions?
4. Do you think there are other factors that might make it difficult for you to perform the behaviors that are not included in the survey?

SPECIFIC PROBES FOR END OF SURVEY [***DO NOT READ ALOUD]***

We have finished with the survey questions. Now, I have a few general questions about the survey, then we will be done.

1. Did you find any of the questions uncomfortable?
   **[If the response is yes]:**
   **Tell me more….**
   **Do you have suggestions on ways to make the questions less uncomfortable?**
2. Is there anything else you would like to share?

That completes our interview. Do you have any questions for me?

Thank you so much for your participation; I appreciate your time and effort in helping me complete my dissertation project.

## Appendix I. IRB Letter of Approval


**Institutional Review Board for Human Research (IRB)**
**Office of Research Integrity (ORI)**
**Medical University of South Carolina**

**Harborview Office Tower**
**19 Hagood Ave., Suite 601, MSC857**
**Charleston, SC 29425-8570**
**Federal Wide Assurance # 1888**

**APPROVAL:**
This is to certify that the research proposal **Pro00054012** entitled:
**Pilot Study of Weight Management Behavioral Questionnaire for Overweight and Obese African American Females**

Submitted by: **Suzanne Sutton**
Department: **Medical University of South Carolina**

For consideration has been reviewed by **IRB-I - Medical University of South Carolina** and approved with respect to the study of human subjects as adequately protecting the rights and welfare of the individuals involved, employing adequately methods of securing informed consent from these individuals and not involving undue risk in the light of potential benefits to be derived therefrom. Additionally, the Institutional Review Board for Human Research (IRB) recommends approval of the investigator's request for Waiver of Signed Consent in accordance with 45 CFR 46.117(c)(1),(2) because the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality and/or because the research presents no more than minimal risk and involves no procedures for which written consent is normally required outside of the research context. The Institutional Review Board for Human Research (IRB) also recommends approval of the investigator's request for a HIPAA Waiver of Authorization, as it appears that the criteria of the Privacy Rule have been satisfied. The HIPAA Waiver of Authorization was reviewed under expedited review procedures. No IRB member who has a conflicting interest was involved in the review or approval of this study, except to provide information as requested by the IRB.

Original Approval Date: **4/20/2016**
Approval Expiration: **4/19/2017**

Type: **Expedited**

Chairman, **IRB-I - Medical University of South Carolina**
**Mark Hamner***

**Statement of Principal Investigator:**

As previously signed and certified, I understand that approval of this research involving human subjects is contingent upon my agreement:

1. To report to the Institutional Review Board for Human Research (IRB) any adverse events or research related injuries which might occur in relation to the human research. I have read and will comply with IRB reporting requirements for adverse events.
2. To submit in writing for prior IRB approval any alterations to the plan of human research.
3. To submit timely continuing review reports of this research as requested by the IRB.
4. To maintain copies of all pertinent information related to the research activities in this project, including copies of informed consent agreements obtained from all participants.
5. To notify the IRB immediately upon the termination of this project, and/or the departure of the principal investigator from this Institution and the project.

* ***Electronic Signature****: This document has been electronically signed by the IRB Chairman through the HSSC eIRB Submission System authorizing IRB approval for this study as described in this letter.*

## Appendix J. IRB Study Protocol

**Medical University of South Carolina**
**Protocol**

**PI Name:** Suzanne M. Sutton

**Study Title**: Pilot Study of a Weight Management Behavioral Questionnaire for Overweight and Obese African American Females

*Once protocol is complete, save it as a Word document. Go back to the IRB application and upload the protocol.*

**TABLE OF CONTENTS –** *Prepare a table of contents based on the following outline, including page numbers, and insert here.*



### A. SPECIFIC AIMS

*List the broad, long-term objectives and the goal of the specific research proposed, e.g., to test a stated hypothesis, create a novel design, solve a specific problem, challenge an existing paradigm or clinical practice, address a critical barrier to progress in the field, or develop new technology.*

Conduct a pilot study to:
**Aim 1.** Evaluate internal consistency and test-retest reliability
**Aim 2.** Assess feasibility and efficacy of recruitment strategies, data collection and analysis strategies, including acceptability of the questionnaire.

### B. BACKGROUND AND SIGNIFICANCE

*Briefly sketch the background leading to the present application, critically evaluate existing knowledge, and specifically identify the gaps that the project is intended to fill. State concisely the importance and health relevance of the research described in this protocol by relating the specific aims to the broad, long-term objectives. If the aims of the study are achieved, state how scientific knowledge or clinical practice will be advanced.*

The overall prevalence of OWO has been increasing in the United States since the late 1970s (NCHS, 2012). The prevalence of OWO in AAF has increased from approximately 63% to 80% over the last four to five decades, compared to an all population increase from 42% to 64% (NCHS, 2012). While the overall prevalence data are concerning, the average BMI, or weight status, for AAF is significantly higher, thus increasing their risk for negative consequences of OWO. For example, approximately 24.3% of AAF are classified as overweight (BMI 25 – 29.9), which is comparable to the overall prevalence of 28.7% in all women (NCHS, 2012). However, 57% of AAF are considered obese (BMI ≥30) compared to 35.8 % of all women (NCHS, 2012). In addition, OWO AAF suffer an increased incidence of diseases and health problems associated with overweight and obesity (Hamby, 2013; Zhang & Rodriguez-Monguio, 2012).

The health and economic burdens associated with OWO are well documented in health care and public policy literature and are projected to continue to rise (Finkelstein et al., 2012). OWO are the leading risk factors for type 2 diabetes mellitus (T2DM) and are closely linked with many other chronic diseases, such as hypertension, cardiovascular disease, stroke, osteoarthritis, and some cancers (Eheman et al., 2012; Hamby,

2013). Morbidity and disability associated with chronic illness and other diseases are increased in those with OWO (Eheman et al., 2012; Flegel, Kit, Orpana, & Graubard, 2013; Kitahara et al., 2014; Wang, McPherson, Marsh, Gortmaker, & Brown, 2011), and obesity is a leading cause of preventable (Bauer, Briss, Goodman, & Bowman, 2014; Borrell & Samuel, 2014) and early death (Greenberg, 2013). Research shows that AAF are more vulnerable than any other demographic group to the health problems of OWO and suffer from comorbidities, such as hypertension, T2DM, coronary heart disease, and disabilities associated with OWO (Boggs et al., 2011; Zhang & Rodriguez-Monguio, 2012).

Research indicates that interventions are less effective in meeting the weight management needs of OWO AAF when compared to their white counterparts, resulting in poor adherence to programs, less weight loss, and failure to maintain weight loss (Fitzgibbon et al., 2012; Kong, Tussing-Humphreys, Odoms-Young, Stolley, & Fitzgibbon, 2014). To improve outcomes, WMIs should target the needs of specific groups and be tailored to meet individual, cultural, socioeconomic conditions (Fitzgibbon et al., 2012; James, 2013; Kong et al., 2014; Kumanyika, Prewitt, Banks, & Samuel-Hodge, 2010; Kumanyika, Whitt-Glover, & Haire-Joshu, 2014). However, there is little research defining or determining the effect of cultural and socioeconomic factors on weight management in OWO AAF, and existing research lacks consistency of methods and measures, preventing application of results to the development and evaluation of successful and sustained WMIs (Fitzgibbon et al., 2012; Kong et al., 2014; Kumanyika et al., 2014). Further, the National Heart, Lung and Blood Institute ([NCLBI], (2013) and the African American Collaborative Obesity Network (Kumanyika et al., 2010), have stated that careful consideration and appreciation of cultural and socioeconomic conditions are essential to effectively plan and implement WMIs in diverse populations of OWO AAF.

To identify gaps in the research, a scoping review was conducted to map literature reporting on the implementation of behavioral WMIs in OWO AAF ((Suzanne Sutton, Magwood, Jenkins, & Nemeth, 2016). Overall, the majority of the reports provided few details about theoretical framework, methods, settings, interventions or implementation strategies. Several of the reviewed reports did not identify a theoretical framework while many failed to detail how their identified framework informed development, implementation or evaluation of their interventions. The most frequently used behavioral change theories included the Social Cognitive Theory (SCT) and the Transtheoretical Model (TTM), alone or in combination with other theories. In addition, few of the studies identified integration of culturally relevant interventions or strategies to meet the needs of their study population (Suzanne Sutton et al., 2016). To meet the needs of diverse populations of OWO AAFs, WMIs should be theoretically grounded and include informed, culturally appropriate interventions and strategies (Agyemang & Powell-Wiley, 2013)of

The proposed pilot study is the third and final phase of the development and pretesting of IBM-grounded questionnaire to measure variables of weight management behaviors in OWO AAF.

**C. PRELIMINARY STUDIES**

*Provide an account of the principal investigator's preliminary studies pertinent to this protocol and/or any other information that will help to establish the experience and competence of the investigator to pursue the proposed project.*

The PI has completed four preliminary studies pertinent to this protocol: *A scoping review of behavioral weight management interventions in overweight/obse African-American females* (Suzanne Sutton et al., 2016) and *A conceptual model of weight management in overweight and obese African American females* (Suzanne Sutton, Magwood, Nemeth, & Jenkins, in press). Pretesting of the questionnaire to detrmine content validity was completed using panel review and cognitive interviewing was used to futher refine the questionnaire. The PI presented a poster detailing the development and pretesting of the IBM-based questionnaire at Southern Nursing Research Society's February 2016 conference (Suzanne Sutton, Jenkins, Nemeth, Fitzsimmons, & Magwood, 2016, February).

Dr. Magwood, the PI's mentor, is a NIH funded PI, with grants from the National Institute of Nursing Research (NINR) and the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). Dr. Magwood's NINR grant work builds on the novel integration of genomics to personalize a socio-culturally tailored diabetes prevention intervention for women residing in subsidized housing communities. The NIDDK funding supports the implementation of a multi-level DPP intervention, linking Subsidized Housing infrastructures with FQHC-Primary Care Networks. She has served as PI and Co-Investigator on internal and external funded research for development and implementation of community engaged interventions and multi-level community-based participatory research with underserved communities. Dr. Magwood was Project Director and Co-PI for REACH 2010: Charleston and Georgetown Diabetes Coalition, a CBPR grant focused on eliminating disparities and

improving care for African Americans with diabetes. She served as Co- PI Investigator for the REACH U.S. Center of Excellence in the Elimination of Disparities (REACH SEA-CEED).

**D. RESEARCH DESIGN AND METHODS (including data analysis)**

*Describe the research design and the procedures to be used to accomplish the specific aims of the project. Explain sequentially the study procedure, including all the visits, contacts, and interactions If the study will be designed in phases and each phase will require separate IRB approval, please specifically indicate this in the description. Include how the data will be collected, analyzed, and interpreted and specify what statistical methods will be used. Discuss the particulars of the research instruments, questionnaires and other evaluation instruments in detail. For well known, established valid and reliable test instruments the detail here can be brief. If interviews or groups settings are to be audio taped or video taped describe in detail the conditions under which it will take place. Describe any new methodology and its advantage over existing methodologies. Discuss the potential difficulties and limitations of the proposed procedures and alternative approaches to achieve the aims. As part of this section, provide a tentative sequence or time-table for the project. Point out any procedures, situations, or materials that may be hazardous to personnel and the precautions to be exercised.*

**Design Overview**

The Integrated Behavioral Model (IBM) was used to guide development of a questionnaire measuring attitudes, beliefs, and post-intention variables related to weight management behaviors of diet, physical activity, and self-monitoring. Expert opinions from researchers and sample participants were used to determine content validity index (CVI) at scale and item levels (DeVellis, 2011; Polit, Beck, & Owen, 2007) while cognitive interviewing (Willis, 2005) was used to identify potential problems with survey items that may result in response error. A pilot study will be conducted to assess internal consistency and test-retest reliability (DeVellis, 2011), feasibility, efficacy of recruitment, data collection, and analysis strategies. Research participants for pilot testing will be adult (≥21 years old) OWO AAF who speak and read English. A purposive sample from the Upstate of South Carolina will be recruited through community outreach.

**Theoretical Framework**

Theoretical frameworks provide a systematic and pragmatic means of understanding health behaviors and the context in which they occur. According to Glanz and Bishop (2010), the most successful health promotion interventions are based in behavioral change theory. Determinants of behavior, their interactions, and outcomes are explained through theory, providing a structure for the development of behavior change interventions and the measurement of effectiveness in health promotion. Experts agree that most behavior is determined by intention to engage derived from a complex interaction of a limited number of factors influenced by individual, socioeconomic, cultural, and environmental conditions (National Research Council [NRC], 2002). In addition, post-intention variables, which frequently occur in the form of environmental constraints and interpersonal barriers, may moderate engagement in the behavior. To capture and explain the most relevant factors related to behavior, theories must be flexible and adaptable to the behavior, population, and context of interest (Fishbein & Cappella, 2006; Montano & Kasprzyk, 2008; Yzer, 2012).

The questionnaire was developed using IBM, an extension of the Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB), as its framework. According to Fishbein (2000), the IBM combines constructs from the TPB, TRA, Social Cognitive Theory (SCT), and the Health Belief Model (HBM) in a theoretic model to understand health behavior and develop strategies to reduce risk and improve health through behavioral change. A meta-analysis of the ability of TPB to predict health behaviors revealed it to be an effective means of uncovering underlying beliefs that determine intention to perform a behavior (McEachan, Conner, Taylor, & Lawton, 2011). SCT and the HBM are also popular and effective means of understanding health behaviors (Glanz & Bishop, 2010). The Institute of Medicine ([IOM] 2002) has indicated that judicious combination of behavioral theories to develop behavioral change interventions and strategies may result in more effective interventions and improved outcomes. Glanz and Bishop (2010) and Fishbein and Cappella (2006) agree with the idea that integrating carefully selected components of behavioral theories provides more robust explanatory frameworks for behaviors significantly affected by individual, cultural, and environmental factors.

The IBM explains a person's behavior as an interaction between attitudes towards a behavior, normative beliefs, and control beliefs, resulting in intention to perform the behavior. Behavioral intention is determined by intrinsic and extrinsic factors that positively or negatively influence a person's desire to engage in a defined behavior and is considered the most important factor in determining actual engagement in a behavior (Fishbein & Ajzen, 2010; Glanz & Bishop, 2009; NRC, 2002). Although the most important factor determining behavior may be intent, not all individuals with intent engage in the behavior. Variables, identified as post-intention variables,

may discourage or prevent individuals from following through with their intention, resulting in an intention-behavior gap. The IBM integrates variables from other behavioral theories, including volitional control, environmental constraints and knowledge and skills, as constructs and provides a means for assessing the impact of post-intention variables on the performance of a behavior

Attitudes towards a behavior are based on an individual's experiential and instrumental beliefs about the defined behavior (Fishbein & Ajzen, 2010). This includes beliefs about the likelihood that performing a behavior will result in certain outcomes, feelings about behavioral outcomes, and the overall evaluation of the behavior as positive or negative. Normative beliefs are determined by an individual's perception of referents attitudes and beliefs about the behavior; for example, does the individual's significant other, family member, or health care provider approve or disapprove of the behavior and its outcomes? In addition, a referent's engagement in the defined behavior affects normative beliefs. The final belief constructs of IBM derived from TPB/TRA are perceived behavioral control and self-efficacy. These do not refer to actual ability to perform the behavior but the individual's beliefs regarding his or her ability to perform the behavior as well as perceptions of conditions that inhibit or facilitate performance of the behavior (Fishbein & Ajzen, 2010).

The IBM extends the determinants of behavior to include post-intention variables, such as skill and knowledge, environmental constraints, media exposure, and past behavior, that moderate performance of a behavior (Fishbein, 2000; Fishbein & Cappella, 2006; Yzer, 2012). Through IBM, Fishbein and Cappella (2006) have postulated that, absent inhibiting post-intention variables, individuals with intent will engage in the defined behavior. Identification of relevant attitudinal, belief, and post-intention variables can be accomplished using IBM to examine individual, cultural, socioeconomic, and environmental factors. Strategies and interventions to guide behavioral change can then be developed to encourage health-promoting behaviors.

The model also allows for tailoring of interventions and messages as determined by an intention-behavior gap (Fishbein & Cappella, 2006; Yzer, 2012). For those who intend to perform a behavior (intenders), the goal is to identify post-intention variables inhibiting performance, such as lack of knowledge or environmental barriers, and overcoming them. For those who have no intent to perform the behavior (non-intenders), the goal is to identify and address beliefs to change attitude and intent (Yzer, 2012). This feature of IBM allows a two-level approach to behavioral change (Fishbein & Cappella, 2006) that may be implemented across populations who have different beliefs but similar background variables.

**Methods**

This proposed study is the third and final phase in the development and pretesting of a weight management behavior questionnaire using the IBM as a theoretical framework. Phase one focused on the development of the questionnaire. In phase two, panel review and cognitive interviewing were used to determine scale and item validity and acceptability of questionnaire and items. In this third phase, a pilot study will be conducted using an online version of the survey to examine internal consistency and test-retest reliability.

**Aim 3 - Pilot Study.**

A pilot study using an internet-based version of the questionnaire will be conducted to examine psychometric properties of the questionnaire as well as feasibility and acceptability of recruitment, data collection, and data analysis strategies.

***Participants, Setting, and Eligibility.*** 50 participants will be recruited through community outreach. Fliers will be posted and business cards available for distribution at community centers, retail and service businesses, and health clinics in Greenville, Spartanburg and Anderson counties. Participants will also be recruited using the Internet, via Facebook postings and emails to social groups and other organizations. Recruitment materials will contain information about the study, contact information for the PI and a web address for the internet-based survey. Inclusion and exclusion criteria will be assessed through screening questions at the beginning of the REDCap internet-based survey. Any person who accesses the online survey and meets screening criteria can participate in the study. Eligibility criteria will include being African-American; female; reported BMI ≥ 25; age ≥21 years; able to speak, read and understand English; no reported history of bariatric surgery; and have access to the Internet. Inclusion and exclusion criteria will be assessed through screening questions at the beginning of the REDCap internet-based survey. Any person who accesses the online survey and meets screening criteria can participate in the study. Participants who complete the both pretest and posttest online surveys may enter a drawing for a $25 gift card by providing an email address.

***Sample Size Determination.*** Test-retest correlation of 0.7 indicates acceptable stability in a new questionnaire (Hertzog, 2008). Since this is a feasibility study, a conservative sample size of 50 participants will be used to reduce the potential for error in determining test-retest reliability. A sample size of 40 is appropriate for an Cronbach's alpha of 0.7 indicating internal consistency and reliability of the items with confidence (Hertzog, 2008).

***Data Collection.*** Research Electronic Data Capture **(**REDCap) will be used for data capture and management. REDCap is a software toolset and workflow methodology for electronic collection and management of research and clinical trial data (Harris et al., 2009; Harris, Thielke, Schuff, Obeid, & Oium, 2007). REDCap provides secure, web-based flexible applications, including real time validation rules with automated data type and range checks at the time of entry. Exports are made available for several statistical packages, including SPSS, SAS, SATA, R, and Microsoft Excel. The system allows the research team to create and design online surveys and engage respondents using a variety of notification methods.

The pilot study survey will include screening questions to determine eligibility, the IBM-based items, and a series of eight questions related to recruitment site, internet access, and acceptability of the questionnaire, including length of time to complete, problems encountered accessing or completing the questionnaire, and an open-ended question asking for any other input. An email will be sent to participants within 14 days of their initial completion of the questionnaire with a web-link to a second questionnaire that only includes the IBM-based items. Participants who complete a second questionnaire for test-retest reliability may enter a drawing for a $25 gift card by providing an email address. One gift card will be drawn for every 5 participants completing the survey a second time.

***Data Analysis.*** Data will be analyzed to determine response rate from each recruitment site, survey and item completion, time to complete, acceptability of survey and methods, internal consistency, and test-retest reliability. Statistical analysis will be performed using SPSS 22 under the supervision of the statistician, Dr. Martina Mueller. Recruitment strategies will be assessed by number of completed surveys from each recruitment site. Returned surveys will be examined for missing items or item completion. Descriptive statistics will be calculated to evaluate survey and item completion, time to complete, and acceptability of survey and methods. Internal consistency of items within subscales will be calculated using Cronbach's alpha. Test-retest reliability will be evaluated by calculating correlation coefficients using Pearson's r (DeVellis, 2011).

## E. PROTECTION OF HUMAN SUBJECTS

1. RISKS TO THE SUBJECTS

*a. Human Subjects Involvement and Characteristics*

*- Describe the proposed involvement of human subjects.*

*- Describe the characteristics of the subject population, including their anticipated number, age range and health status.*

This research will be conducted with overweight and obese African American females from the Anderson, Greenville and Spartanburg counties in South Carolina. There are approximately 59,000 overweight and obese African American females residing in these three counties. Convenience samples for cognitive interviewing and pilot testing will be recruited through fliers posted at community centers, county and private health clinics, churches, community colleges and universities. Participation in the study includes completing a behavioral questionnaire and one-on-one interviews.

**Targeted/Planned Enrollment Table**

Total Planned Enrollment 50

| TARGETED/PLANNED ENROLLMENT: Number of Subjects | | | |
|---|---|---|---|
| | Sex/Gender | | |
| **Ethnic Category** | Females | Males | Total |
| Hispanic or Latino | 0 | 0 | 0 |
| Not Hispanic or Latino | 50 | 0 | 50 |
| **Ethnic Category: Total of All Subjects*** | 50 | | |

| **Racial Categories** | | | |
|---|---|---|---|
| American Indian/Alaska Native | 0 | 0 | 0 |
| Asian | 0 | 0 | 0 |
| Native Hawaiian or Other Pacific Islander | 0 | 0 | 0 |
| Black or African American | 50 | 0 | 50 |
| White | 0 | 0 | 0 |
| **Racial Categories: Total of All Subjects*** | 50 | 0 | 50 |

**The "Ethnic Category: Total of All Subjects" must be equal to the"Racial Categories: Total of All Subjects".*

*- Identify the criteria for inclusion or exclusion of any subpopulation.*
*- Explain the rationale for the involvement of special classes of subjects, such as fetuses, neonates, pregnant women, children, prisoners, institutionalized individuals, or others who may be considered vulnerable populations. Note that 'prisoners' includes all subjects involuntarily incarcerated (for example, in detention centers) as well as subjects who become incarcerated after the study begins.*
*- If you propose to exclude any sex/gender or racial/ethnic group, include a compelling rationale for the proposed exclusion. For example, 1) the research question addressed is relevant to only one gender or 2) evidence from prior research strongly demonstrates no difference between genders.*
*- Provide either a description of the plans to include children or, if children will be excluded from the proposed research, then you must present an acceptable justification for the exclusion. For example, 1) the condition is rare in children as compared to adults or 2) insufficient data are available in adults to judge risk in children.*
*- List any collaborating sites where human subjects research will be performed, and describe the role of those sites in performing the proposed research.*

This research study focuses on weight management behaviors in African American females; as such, other racial/ethnic groups and males will not be included in the study participants. Eligibility criteria will include being African-American; female; reported BMI ≥ 25; age ≥21 years; able to speak, read and understand English; no reported history of bariatric surgery; and access to the internet.

b. Sources of Materials
*- Describe the research material obtained from living human subjects in the form of specimens, records, or data.*
*- Describe any data that will be recorded on the human subjects involved in the project.*
*- Describe the linkages to subjects, and indicate who will have access to subject identities.*
*- Provide information about how the specimens, records, or data are collected and whether material or data will be collected specifically for your proposed research project.*

Demographic data will be collected using a survey. Demographic and health information to be collected will include age, height, weight, county of residence, level of education, employment status and relationship status. Information about weight management behaviors will be collected using surveys. Participants in test-retest will be assigned random numbers used to link completed surveys. Participants will be asked to provide an email address for gift card drawing and disbursement.

c. Potential Risks
*- Describe the potential risks to subjects (physical, psychological, social, legal, or other), and assess their likelihood and seriousness to the subjects.*
*- Where appropriate, describe alternative treatments and procedures, including the risks and benefits of the alternative treatments and procedures to participants in the proposed research.*

There is minimal risk to participants, involving possible moral distress as they respond to questions about overweight, obesity, health risks, behavior and normative beliefs.

Risks Related to Loss of Confidentiality: With the collection of identifiable information, there is always the potential for inappropriate disclosure of the information even though we have taken precautions to minimize this risk. Access to this data containing your identifying information, will be limited to the extent possible by State and Federal law.

2. ADEQUACY OF PROTECTION AGAINST RISKS

a. Recruitment and Informed Consent
*- Describe plans for the recruitment of subjects (where appropriate) and the process for obtaining informed consent. If the proposed studies will include children, describe the process for meeting requirements for parental permission and child assent.*
*- Include a description of the circumstances under which consent will be sought and obtained, who will seek it, the nature of the information to be provided to prospective subjects, and the method of documenting consent.*

Participants in the pilot study will be recruited by community outreach. The pilot study will be completed online, using REDCap. An informed consent statement will be included at the beginning of the survey and potential participants have the option of discontinuing. Participants who complete the survey are assumed to have given informed consent.

b. Protection against Risk
*- Describe planned procedures for protecting against or minimizing potential risks, including risks to confidentiality, and assess their likely effectiveness.*
*- Where appropriate, discuss plans for ensuring necessary medical or professional intervention in the event of adverse effects to the subjects.*
*- Studies that involve clinical trials (biomedical and behavioral intervention studies) must include a description of the plan for data and safety monitoring of the research and adverse event reporting to ensure the safety of subjects in Section 4 below.*

Confidentiality and privacy for participants who complete the online version of the questionnaire will be maintained by REDCap. The underlying database is hosted in a secure data center at MUSC, a secure environment for data systems and servers on campus, and includes redundancy, failover capability, backups and extensive security checks. The system has several layers of protection including, user/group account management, "Data Access Groups" which allow data to be entered by multiple groups in one database with segmented user rights for entered data, audit trails for all changes, queries and reports, and Secure Sockets Layer (SSL) encryption (Harris et al., 2009; Harris et al., 2007).

In addition, an informed consent detailing the study purpose and methods will appear before the questionnaire and will include an opt-out option. Participants may exit the survey site at any time. Participants who complete the online questionnaire will be provided a random identification number that will be used when recording information in SPSS. This number will be used to link submissions of participants who choose to complete the survey a second time for test-retest reliability. A digital copy of email addresses will be kept on a secure MUSC server. The document with the email addresses will be destroyed when the online pilot questionnaire is closed.

All digital files, including survey data, email lists and memos, will be stored on a secure MUSC server or REDCap. Any paper materials, such as field notes and paper surveys, will be scanned and uploaded to a secure MUSC server and original copies destroyed. No identifying information, except email addresses, will be collected, and these will be discarded in a secure manner at the completion of the study.

3. POTENTIAL BENEFITS OF THE PROPOSED RESEARCH TO THE SUBJECTS AND OTHERS

*- Discuss the potential benefits of the research to the subjects and others.*
*- Discuss why the risks to subjects are reasonable in relation to the anticipated benefits to subjects and others.*

The proposed research may not directly benefit the participants but will add to the knowledge base and practice.

4. IMPORTANCE OF THE KNOWLEDGE TO BE GAINED

*- Discuss the importance of the knowledge gained or to be gained as a result of the proposed research.*
*- Discuss why the risks to subjects are reasonable in relation to the importance of the knowledge that reasonably may be expected to result.*

*- NOTE: Test articles (investigational new drugs, devices, or biologicals) including test articles that will be used for purposes or administered by routes that have not been approved for general use by the Food and Drug Administration (FDA) must be named. State whether the 30-day interval between submission of applicant certification to the FDA and its response has elapsed or has been waived and/or whether use of the test article has been withheld or restricted by the Food and Drug Administration, and/or the status of requests for an IND or IDE covering the proposed use of the test article in the research plan.*

The findings from this study will be used to refine a theoretically-grounded, efficient and universal instrument that may be used to assess the weight management needs of OWO AAF and guide development of effective WMIs, resulting in risk reduction and improved health-related quality of life in this vulnerable population.

5. SUBJECT SAFETY AND MINIMIZING RISKS (Data and Safety Monitoring Plan)

*Studies that involve *clinical trials (see description below) must include a description of the plan for subject safety and minimizing risks of the research, including data monitoring and adverse event reporting to ensure the safety of subjects. The complexity of the plan should be determined by the level of risk to subjects. The plan should specify: 1) what will be monitored, 2) how frequently the monitoring will occur, 3) who will be responsible for the monitoring, and 4) study endpoints.*

N/A

*Clinical Trials
*A* clinical trial *is a prospective biomedical or behavioral research study of human subjects that is designed to answer specific questions about biomedical or behavioral interventions (drugs, treatments, devices, or new ways of using known drugs, treatments, or devices).*
*Clinical trials are used to determine whether new biomedical or behavioral interventions are safe, efficacious, and effective. Behavioral human subjects research involving an intervention to modify behavior (diet, physical activity, cognitive therapy, etc.) fits these criteria of a clinical trial. Human subjects research to develop or evaluate clinical laboratory tests (e.g. imaging or molecular diagnostic tests) might be considered to be a clinical trial if the test will be used for medical decision-making for the subject or the test itself imposes more than minimal risk for subjects.*

**F. REFERENCES/LITERATURE CITATIONS**

*List all references. Each reference must include the title, names of all authors, book or journal, volume number, page numbers, and year of publication. The reference should be limited to relevant and current literature. It is important to be concise and to select only those literature references pertinent to the proposed research.*

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## G. CONSULTANTS

*Where applicable, attach electronic versions of appropriate letters from all individuals confirming their roles in the project. Go to the application under "additional uploads" to attach this information*.

N/A

## H. FACILITES AVAILABLE

*Describe the facilities available for this project including laboratories, clinical resources, etc.*

N/A

## I. INVESTIGATOR BROCHURE

*If applicable, attach the electronic version of the investigator brochure. Go to the application under "additional uploads" to attach this information.*

N/A

## J. APPENDIX

*Attach any additional information pertinent to the application, such as surveys or questionnaires, diaries or logs, etc. Go to the application under "additional uploads" to attach this information.*

## Appendix K. Wiaver of Informed Consent

Read the introduction and instructions carefully. Thank you for your time and consideration.

You are being asked to participate in a research study because you have identified yourself as an African-American woman who is considered to be overweight or obese. The research study is being conducted through the Medical University of South Carolina and your participation is completely voluntary.

The Centers for Disease Control and Prevention (CDC) have identified overweight and obesity as important health concerns for women. However, factors influencing weight and weight management behaviors in African-American women who are diagnosed as overweight and obese are poorly understood.

Your participation in this research is an important part in developing a questionnaire that will assess the needs of overweight and obese African-American women in order to develop weight management programs to help improve health and decrease risks. The questionnaire asks about dietary, physical activity and self-monitoring behaviors that affect weight and health, as well as other topics, such as educational background, employment status, and social situations. You will also be asked to share your opinion about your experience in completing this survey You will be asked to complete the questionnaire two times, with a 10 to 14 day interval between the first and second times.

All participants who complete the study and provide an email address or contact number will be entered into a drawing for a gift card.

Your participation is completely voluntary and you may quit the survey at any time. Please allow about 30 minutes to finish your survey.

Although the investigator in charge of this study has plans in place to protect the confidentiality of your information, this cannot be absolutely guaranteed. There is a risk of loss of confidentiality of personal information. If you have any questions please contact:

Suzanne Sutton MSN, RN
864-503-5497
sms38@musc.edu

MUSC
MEDICAL UNIVERSITY of SOUTH CAROLINA
IRB Number: «ID»
Date Approved «ApprovalDate»

**Appendix L. Advertisement for Recruitment for Pilot Study**

# DECREASING HEALTH RISKS IN AFRICAN-AMERICAN WOMEN

## Be a part of an important research study on weight management behaviors.

- Are you an African-American women 21 years of age or older?
- Are you considered overweight?

If you answered yes to these questions, you may be able to participate in a weight management behaviors study.

The purpose of this research is to develop a questionnaire that will identify the needs of African-American women who may want to improve their health through weight management.

Fifty volunteers are needed to complete an online survey about weight and weight management behaviors two times (10 to 14 days apart). You will then be entered into a drawing for a gift card. The survey should take approximately 30 minutes to complete each time. The survey can be saved to complete at a later time.

If you are interested in participating, go to the following web address:

https://redcap.musc.edu/surveys/?s=MTYLHJ9YT4

Then, enter code: LTMX8XAMJ

Alternatively, if you have a device that has an app capable of reading QR codes, you may scan the QR code below, which should take you directly to the survey in a web browser. The survey can be completed using most devices with internet access.

For further information, please contact:
Suzanne Sutton, MSN, RN
Doctoral Student
sms38@musc.edu

# Screening Survey for Questionnaire on Weight Management Behaviors

If you are interested in participating in this research project, please complete the survey below to verify eligibility.

Thank you.

**The purpose of this research is to develop a questionnaire that will identify the needs of African-American women who may want to improve their health through weight management.**

**Volunteers are needed to complete an online survey about weight and weight management behaviors twice, 10 - 14 days apart. Volunteers who complete the survey both times will be eligible to enter a drawing for a gift card. One out of every five participants will win a gift card.**

**If you are interested in participating in this research, please complete the following screening survey. Qualifying volunteers will be immediately taken to the survey.**

| | |
|---|---|
| I consider myself to be African-American | ◯ True<br>◯ False |
| I am female. | ◯ True<br>◯ False |
| I am considered to be overweight or obese by the federal government | ◯ True<br>◯ False |
| I have had surgery to help me lose weight. | ◯ True<br>◯ False |

Thank you for volunteering to participate in our research. Unfortunately, you are not eligible to participate. Please click submit button below and exit your browser.

We appreciate your time and effort.

# Questionnaire on Weight Management Behaviors

**Read the introduction and instructions carefully. Thank you for your time and consideration.**

**You are being asked to participate in a research study because you have identified yourself as an African-American woman who is considered to be overweight or obese. The research study is being conducted through the Medical University of South Carolina and your participation is completely voluntary.**

**The Centers for Disease Control and Prevention (CDC) have identified overweight and obesity as important health concerns for women. However, factors influencing weight and weight management behaviors in African-American women who are diagnosed as overweight and obese are poorly understood.**

**Your participation in this research is an important part in developing a questionnaire that will assess the needs of overweight and obese African-American women in order to develop weight management programs to help improve health and decrease risks. The questionnaire asks about dietary, physical activity and self-monitoring behaviors that affect weight and health, as well as other topics, such as educational background, employment status, and social situations. You will also be asked to share your opinion about your experience in completing this survey You will be asked to complete the questionnaire two times, with a 10 to 14 day interval between the first and second times.**

**All participants who complete the study and provide an email address or contact number will be entered into a drawing for a gift card.**

**Your participation is completely voluntary and you may quit the survey at any time. Please allow about 30 minutes to finish your survey.**

**Although the investigator in charge of this study has plans in place to protect the confidentiality of your information, this cannot be absolutely guaranteed. There is a risk of loss of confidentiality of personal information. If you have any questions please contact:**

**Suzanne Sutton MSN, RN**
**864-503-5497**
**sms38@musc.edu**

I certify I am at least 21 years old and I consent to participate in this research. I understand I can stop my participation at any time by closing the online survey.

◯ Yes ◯ No

Thank you.

**INTRODUCTION**

**This questionnaire has 6 sections. The first section asks about personal information, like age, height, weight and where you live.**

**The other six sections ask questions about your beliefs and attitudes about weight management behaviors, such as diet, physical activity and self-monitoring.**

**DEFINITIONS OF WEIGHT MANAGEMENT BEHAVIORS**

**DIETARY BEHAVIORS:**

1. **Eating 4 - 5 servings of fruits and vegetables daily.**
2. **Limiting daily caloric intake to a prescribed amount.**
3. **Limiting daily intake of fats to a prescribed amount.**

**PHYSICAL ACTIVITY BEHAVIORS:**

1. **150 minutes of moderately-intense aerobic activity per week**
2. **Muscle strengthening activities twice weekly.**
3. **Decreasing the amount of time spent watching television or playing video games each week.**

**SELF MONITORING BEHAVIORS:**

1. **Tracking diet and physical activity daily.**
2. **Weighing once a week**

**This is a self-administered survey, meaning participants read the survey and answer the questions individually.**

**DIRECTIONS FOR SECTION 1**

**Please answer the following questions as they relate to your current status. Please enter your answers in the spaces provided.**

How old were you on your last birthday?

◯ 20 or younger ◯ 21 ◯ 22 ◯ 23 ◯ 24 ◯ 25 ◯ 26 ◯ 27 ◯ 28 ◯ 29
◯ 30 ◯ 31 ◯ 32 ◯ 33 ◯ 34 ◯ 35 ◯ 36 ◯ 37 ◯ 38 ◯ 39 ◯ 40 ◯ 41
◯ 42 ◯ 43 ◯ 44 ◯ 45 ◯ 46 ◯ 47 ◯ 48 ◯ 49 ◯ 50 ◯ 51 ◯ 52 ◯ 53
◯ 54 ◯ 55 ◯ 56 ◯ 57 ◯ 58 ◯ 59 ◯ 60 ◯ 61 ◯ 62 ◯ 63 ◯ 64 ◯ 65
◯ 66 or older

Use the table below to determine your height in inches.

| IF YOU ARE: *Feet* | *inches* | ENTER: *inches* |
|---|---|---|
| 4 | 8 | 56 |
| 4 | 9 | 57 |
| 4 | 10 | 58 |
| 4 | 11 | 59 |
| 5 | 0 | 60 |
| 5 | 1 | 61 |
| 5 | 2 | 62 |
| 5 | 3 | 63 |
| 5 | 4 | 64 |
| 5 | 5 | 65 |
| 5 | 6 | 66 |
| 5 | 7 | 67 |
| 5 | 8 | 68 |
| 5 | 9 | 69 |
| 5 | 10 | 70 |
| 5 | 11 | 71 |
| 6 | 0 | 72 |
| 6 | 1 | 73 |
| 6 | 2 | 74 |
| 6 | 3 | 75 |
| 6 | 4 | 76 |
| 6 | 5 | 77 |
| 6 | 6 | 78 |

How tall are you (inches)?

_____

How much do you weight (please enter in pounds, to the best of your recollection)?

_____

BMI _____

I currently live in:

◯ Anderson County
◯ Greenville County
◯ Spartanburg County
◯ None of the above

What is the highest level of education you have completed?

◯ Less than a high school diploma
◯ High school diploma/ged
◯ Some college
◯ Associate's degree
◯ Bachelor's degree
◯ Some graduate school
◯ Master's degree
◯ Any post-master's education

What best describes your current employment status?  You may choose more than one answer

☐ Employed full time
☐ Employed part time
☐ Unemployed/looking for work
☐ Retired
☐ Disabled
☐ Full/part time college student

Which statement BEST describes your current relationship status?

☐ Married or partnered
☐ In a casual relationship/dating
☐ Single - never married/partnered
☐ Single - divorce/separated
☐ Single - widowed
☐ Other

If you chose other for your relationship status, please explain.

_____

Please choose the area that best describes where you currently live:

◯ Urban area (city)
◯ Rural area (country, in the county)
◯ Suburban area (city outskirts, small town)
◯ Other

If you chose other for the area where you live, please explain.

_____

How did you find out about this study?

◯ At a community center
◯ At a free medical clinic
◯ At a county medical clinic
◯ At a retail or service business
◯ Online
◯ From a friend
◯ At work
◯ Other

If you chose other for above, how did you find out about the study?

_____

USING THE SLIDE BAR TO RATE FEELINGS AND OPINIONS.

The remaining items in this questionnaire ask you to rate how you feel using a slider bar with a blue marker.  Please watch the YouTube video on using the slider bar.

**DIRECTIONS FOR SECTION 2.**

**The questions in section 2 ask you to rate YOUR feelings and opinions ABOUT weight management behaviors. You may feel some of the questions do not apply to you, but please answer all questions to the best of your ability. There are no right or wrong answers.**

**Please indicate the strength of your feelings or opinions using the blue marker on the slider bar.**

**Some of the questions may appear to be similar, but they do address somewhat different issues. Please read each question carefully.**

My consuming 4 - 5 servings of fruits and vegetables each day would be:
unpleasant pleasant

*(Place a mark on the scale above)*

My consuming 4 - 5 servings of fruits and vegetables each day would be:
harmful beneficial

*(Place a mark on the scale above)*

My consuming 4 - 5 servings of fruits and vegetables each day would be:
unsatisfying satisfying

*(Place a mark on the scale above)*

My consuming 4 - 5 servings of fruits and vegetables each day would be:
unhealthy healthy

*(Place a mark on the scale above)*

Limiting my daily caloric intake to a prescribed amount would be:
unpleasant pleasant

*(Place a mark on the scale above)*

Limiting my daily caloric intake to a prescribed amount would be:
unsatisfying satisfying

*(Place a mark on the scale above)*

Limiting my daily caloric intake to a prescribed amount would be:
unhealthy healthy

*(Place a mark on the scale above)*

Limiting my daily intake of fats to a prescribed amount would be:
harmful beneficial

*(Place a mark on the scale above)*

Limiting my daily intake of fats to a prescribed amount would be:
unsatisfying satisfying

*(Place a mark on the scale above)*

Limiting my daily intake of fats to a prescribed amount would be:
unhealthy healthy

*(Place a mark on the scale above)*

Limiting my daily intake of sugary drinks to a prescribed amount would be:

unpleasant pleasant

*(Place a mark on the scale above)*

Limiting my daily intake of sugary drinks to a prescribed amount would be:

harmful beneficial

*(Place a mark on the scale above)*

Limiting my daily intake of sugary drinks to a prescribed amount would be:

unsatisfying satisfying

*(Place a mark on the scale above)*

Limiting my daily intake of sugary drinks to a prescribed amount would be:

unhealthy healthy

*(Place a mark on the scale above)*

Participating in 150 minutes of moderately-intense physical activity each week would be:

unpleasant pleasant

*(Place a mark on the scale above)*

Participating in 150 minutes of moderately-intense physical activity each week would be:

harmful beneficial

*(Place a mark on the scale above)*

Participating in 150 minutes of moderately-intense physical activity each week would be:

unhealthy healthy

*(Place a mark on the scale above)*

Participating in muscle strengthening activities two days a week would be:

unhealthy healthy

*(Place a mark on the scale above)*

Decreasing the amount of time I spend watching TV or playing video games would be:

unpleasant pleasant

*(Place a mark on the scale above)*

Decreasing the amount of time I spend watching TV or playing video games would be:

unhealthy healthy

*(Place a mark on the scale above)*

My tracking my diet and physical activity daily would be:

unpleasant pleasant

*(Place a mark on the scale above)*

My tracking my diet and physical activity daily would be:

not important important

*(Place a mark on the scale above)*

My tracking my diet and physical activity daily would be:

useless useful

*(Place a mark on the scale above)*

My weighing myself at least once a week would be

unpleasant pleasant

*(Place a mark on the scale above)*

My weighing myself at least once a week would be

not important important

*(Place a mark on the scale above)*

My weighing myself at least once a week would be

useless useful

*(Place a mark on the scale above)*

**DIRECTIONS FOR SECTION 3.**

**The questions in section 3 asks you to consider how likely it is that weight management behaviors will impact your life.**

**You may feel some of the questions do not apply to you, but please answer all questions to the best of your ability.  There are no right or wrong answers.**

**Please indicate the strength of your feelings or opinions using the blue marker on the slider bar.**

**Some of the questions may appear to be similar, but they do address somewhat different issues.  Please read each question carefully.**

If I consume 4 - 5 servings of fruits and vegetables each day, my health will improve.

unlikely likely

*(Place a mark on the scale above)*

If I consume 4 - 5 servings of fruits and vegetables each day, I will feel better.

unlikely likely

*(Place a mark on the scale above)*

If I consume 4 - 5 servings of fruits and vegetables each day, I will lose weight.

unlikely likely

*(Place a mark on the scale above)*

If I limit my daily caloric intake to a prescribed amount, my health will improve.

unlikely likely

*(Place a mark on the scale above)*

If I limit my daily caloric intake to a prescribed amount, I will feel better.

unlikely likely

*(Place a mark on the scale above)*

If I limit my daily caloric intake to a prescribed amount, I will lose weight.

unlikely likely

*(Place a mark on the scale above)*

If I limit my daily fat intake to a prescribed amount, my health will improve.

unlikely likely

*(Place a mark on the scale above)*

If I limit my daily fat intake to a prescribed amount, I will feel better.

unlikely likely

*(Place a mark on the scale above)*

If I limit my daily fat intake to a prescribed amount, I will lose weight

unlikely likely

*(Place a mark on the scale above)*

If I limit my intake of sugary drinks to a prescribed amount, my health will improve.

unlikely likely

*(Place a mark on the scale above)*

If I limit my intake of sugary drinks to a prescribed amount, I will lose weight.

unlikely likely

*(Place a mark on the scale above)*

If I participate in 150 minutes of moderately-intense physical activity weekly, my health will improve.

unlikely likely

*(Place a mark on the scale above)*

If I participate in 150 minutes of moderately-intense physical activity weekly, I will be more physically fit.

unlikely likely

*(Place a mark on the scale above)*

If I participate in 150 minutes of moderately-intense physical activity weekly, I will lose weight.

unlikely likely

*(Place a mark on the scale above)*

If I participate in muscle strengthening activity 2 times weekly, my health will improve.

unlikely likely

*(Place a mark on the scale above)*

If I participate in muscle strengthening activity 2 times weekly, I will be more physically fit.

unlikely likely

*(Place a mark on the scale above)*

If I participate in muscle strengthening activity 2 times weekly, I will lose weight.

unlikely likely

*(Place a mark on the scale above)*

If I decrease the amount of time I spend watching TV or playing video games, my health will improve.

unlikely likely

*(Place a mark on the scale above)*

If I decrease the amount of time I spend watching TV or playing video games, I will lose weight.

unlikely likely

*(Place a mark on the scale above)*

If I monitor my diet and physical activity daily, my health will improve.

unlikely likely

*(Place a mark on the scale above)*

If I monitor my diet and physical activity daily, I will feel better.

unlikely likely

*(Place a mark on the scale above)*

If I monitor my diet and physical activity daily, I will be more physically fit.

unlikely likely

*(Place a mark on the scale above)*

If I monitor my diet and physical activity daily, I will lose weight.

unlikely likely

*(Place a mark on the scale above)*

If I weigh myself weekly, I will lose weight.

unlikely likely

*(Place a mark on the scale above)*

**DIRECTIONS FOR SECTION 4.**

**The following section asks how you THINK others in your life MIGHT feel about your weight management behaviors.**

**You may feel some of the questions do not apply to you, but please answer all questions to the best of your ability. There are no right or wrong answers.**

**Please indicate the strength of your feelings or opinions using the blue marker on the slider bar.**

**Some of the questions may appear to be similar, but they do address somewhat different issues. Please read each question carefully.**

Members of my family think I _____ eat 4 - 5 servings of fruits or vegetables a day.
should not should

*(Place a mark on the scale above)*

My close friends think I _____ eat 4 - 5 servings of fruits or vegetables a day.
should not should

*(Place a mark on the scale above)*

My spiritual leaders think I_____ eat 4 - 5 servings of fruits or vegetables a day.
should not should

*(Place a mark on the scale above)*

Members of my family think I_____ limit my daily intake of calories to a prescribed amount.
should not should

*(Place a mark on the scale above)*

My close friends think I_____ limit my daily intake of calories to a prescribed amount.
should not should

*(Place a mark on the scale above)*

My health care providers think I_____ limit my daily intake of calories to a prescribed amount.
should not should

*(Place a mark on the scale above)*

My spiritual leaders think I_____ limit my daily intake of calories to a prescribed amount.
should not should

*(Place a mark on the scale above)*

Members of my family think I_____ limit my daily intake of fats to a prescribed amount.
should not should

*(Place a mark on the scale above)*

My health care providers think I_____ limit my daily intake of fats to a prescribed amount.
should not should

*(Place a mark on the scale above)*

Members of my family think I_____ limit my daily intake of sugary drinks to a prescribed amount.

should not should

*(Place a mark on the scale above)*

My close friends think I_____ limit my daily intake of sugary drinks to a prescribed amount.

should not should

*(Place a mark on the scale above)*

My health care providers think I_____ limit my daily intake of sugary drinks to a prescribed amount.

should not should

*(Place a mark on the scale above)*

My spiritual leaders think I_____ limit my daily intake of sugary drinks to a prescribed amount.

should not should

*(Place a mark on the scale above)*

Members of my family think I _____ participate in 150 minutes of moderately-intense physical activity weekly.

should not should

*(Place a mark on the scale above)*

My close friends think I _____ participate in 150 minutes of moderately-intense physical activity weekly.

should not should

*(Place a mark on the scale above)*

My health care providers think I _____ participate in 150 minutes of moderately-intense physical activity weekly.

should not should

*(Place a mark on the scale above)*

My spiritual leaders think I _____ participate in 150 minutes of moderately-intense physical activity weekly.

should not should

*(Place a mark on the scale above)*

Members of my family think I _____ participate in muscle strengthening activity two times weekly.

should not should

*(Place a mark on the scale above)*

My health care providers think I _____ participate in muscle strengthening activity two times weekly.

should not should

*(Place a mark on the scale above)*

My spiritual leaders think I _____ participate in muscle strengthening activity two times weekly.

should not should

*(Place a mark on the scale above)*

Members of my family think I _____ decrease the amount of time I spend watching TV or playing video games.

should not should

*(Place a mark on the scale above)*

Members of my family think I _____ monitor my diet and physical activity daily.

should not should

*(Place a mark on the scale above)*

My health care providers think I _____ monitor my diet and physical activity daily.

should not should

*(Place a mark on the scale above)*

My health care providers think I _____ weigh myself at least one time weekly.

should not should

*(Place a mark on the scale above)*

**DIRECTIONS FOR SECTION 5.**

**The questions in this section ask you to think about how circumstances in your life may effect your weight management behavior.**

**You may feel some of the questions do not apply to you, but please answer all questions to the best of your ability.  There are no right or wrong answers.**

**Please indicate the strength of your feelings or opinions using the blue marker on the slider bar.**

**Some of the questions may appear to be similar, but they do address somewhat different issues.  Please read each question carefully.**

Strong emotions would make it difficult for me to consume 4 - 5 servings of fruits and vegetables daily.

strongly disagree strongly agree

*(Place a mark on the scale above)*

Strong emotions would make it difficult for me to limit my daily caloric intake to a prescribed amount.

strongly disagree strongly agree

*(Place a mark on the scale above)*

Strong emotions would make it difficult for me to limit my daily fat intake to a prescribed amount.

strongly disagree strongly agree

*(Place a mark on the scale above)*

Strong emotions would make it difficult for me to monitor my diet and physical activity daily.

strongly disagree strongly agree

*(Place a mark on the scale above)*

The easy availability and/or affordability of unhealthy food would make it difficult for me to consume 4 - 5 servings of fruits and vegetables daily.

strongly disagree strongly agree

*(Place a mark on the scale above)*

The easy availability and/or affordability of unhealthy food would make it difficult for me to limit my daily caloric intake to a prescribed amount.

strongly disagree strongly agree

*(Place a mark on the scale above)*

The easy availability and/or affordability of unhealthy food would make it difficult for me to limit my daily fat intake to a prescribed amount.

strongly disagree strongly agree

*(Place a mark on the scale above)*

If I were tired it would make it difficult for me to consume 4 - 5 servings of fruits and vegetables daily.

strongly disagree strongly agree

*(Place a mark on the scale above)*

If I were tired it would make it difficult for me to limit my daily fat intake to a prescribed amount.

strongly disagree strongly agree

*(Place a mark on the scale above)*

If I were tired it would make it difficult for me to participate in 150 minutes of moderately-intense aerobic activity weekly.

strongly disagree strongly agree

*(Place a mark on the scale above)*

If I were tired it would make it difficult for me to participate in muscle strengthening activities 2 times weekly.

strongly disagree strongly agree

*(Place a mark on the scale above)*

If I were tired it would make it difficult for me to participate in monitor my diet and physical activity daily.

strongly disagree strongly agree

*(Place a mark on the scale above)*

Other responsibilities would make it difficult for me to consume 4 - 5 servings of fruit and vegetables daily.

strongly disagree strongly agree

*(Place a mark on the scale above)*

Other responsibilities would make it difficult for me to limit my daily caloric intake to a prescribed amount.

strongly disagree strongly agree

*(Place a mark on the scale above)*

Other responsibilities would make it difficult for me to limit my daily fat intake to a prescribed amount.

strongly disagree strongly agree

*(Place a mark on the scale above)*

Other responsibilities would make it difficult for me to participate in 150 minutes of moderately-intense aerobic activity weekly.

strongly disagree strongly agree

*(Place a mark on the scale above)*

Other responsibilities would make it difficult for me to participate in muscle strengthening activities two times weekly.

strongly disagree strongly agree

*(Place a mark on the scale above)*

Other responsibilities would make it difficult for me to monitor my diet and physical activities daily.

strongly disagree strongly agree

*(Place a mark on the scale above)*

When I am emotional, I would be _____ to eat 4 - 5 servings of fruits and vegetables daily.

less likely more likely

*(Place a mark on the scale above)*

The easy availability and/or affordability of unhealthy food choices would make me _____ to eat 4 - 5 servings of fruits and vegetables daily.

less likely more likely

*(Place a mark on the scale above)*

My other responsibilities would make me _____ to eat 4 - 5 servings of fruits and vegetables daily.

less likely more likely

*(Place a mark on the scale above)*

When I am emotional, I would be _____ to limit my daily caloric intake to a prescribed amount.

less likely more likely

*(Place a mark on the scale above)*

The easy availability and/or affordability of unhealthy food choices would make me _____ to limit my daily caloric intake to a prescribed amount.

less likely more likely

*(Place a mark on the scale above)*

Being tired would make me _____ to limit my daily caloric intake to a prescribed amount.

less likely more likely

*(Place a mark on the scale above)*

When I am emotional, I would be _____ to limit my daily fat intake to a prescribed amount.

less likely more likely

*(Place a mark on the scale above)*

My other responsibilities would make me _____ to limit my daily fat intake to a prescribed amount.

less likely more likely

*(Place a mark on the scale above)*

My other responsibilities would make it _____ for me to participate in 150 minutes of moderately-intense aerobic activity weekly.

less likely more likely

*(Place a mark on the scale above)*

Being tired would make it _____ for me to participate in 150 minutes of moderately-intense aerobic activity weekly.

less likely more likely

*(Place a mark on the scale above)*

If I had easy access to gyms or recreational facilities, I would be _____ to participate in 150 minutes of moderately-intense aerobic activity weekly.

less likely more likely

*(Place a mark on the scale above)*

Other responsibilities would make it _____ for me to participate in muscle strengthening activities 2 times weekly

less likely more likely

*(Place a mark on the scale above)*

If I were tired, I would be _____ to participate in muscle strengthening activities 2 times weekly

less likely more likely

*(Place a mark on the scale above)*

If I had easy access to gyms or recreational facilities to exercise, I would be _____ to participate in muscle strengthening activities 2 times weekly

less likely more likely

*(Place a mark on the scale above)*

When I am emotional, I would be _____ to monitor my diet and physical activity daily.

less likely more likely

*(Place a mark on the scale above)*

If I were tired, I would be _____ to monitor my diet and physical activity daily.

less likely more likely

*(Place a mark on the scale above)*

My other responsibilities would make it _____ for me to monitor my diet and physical activity daily.

less likely more likely

*(Place a mark on the scale above)*

**DIRECTIONS FOR SECTION 6.**

**This section asks you about how certain situations may impact your ability to perform weight management behaviors.**

**You may feel some of the questions do not apply to you, but please answer all questions to the best of your ability.  There are no right or wrong answers.**

**Please indicate the strength of your feelings or opinions using the blue marker on the slider bar.**

**Some of the questions may appear to be similar, but they do address somewhat different issues.  Please read each question carefully.**

It is difficult for me to obtain fresh fruits and vegetables where I live.

strongly disagree strongly agree

*(Place a mark on the scale above)*

I do not know how to count calories.

strongly disagree strongly agree

*(Place a mark on the scale above)*

I do not know how to count fat content.

strongly disagree strongly agree

*(Place a mark on the scale above)*

I don't know if I am capable of performing 150 minutes of moderately-intense aerobic activity weekly.

strongly disagree strongly agree

*(Place a mark on the scale above)*

My neighborhood environment would make it easy for me to participate in 150 minutes of moderately-intense aerobic activity weekly.

strongly disagree strongly agree

*(Place a mark on the scale above)*

I don't know how to do muscle strengthening activities.

strongly disagree strongly agree

*(Place a mark on the scale above)*

I don't know if I am capable of performing muscle strengthening activities 2 days weekly.

strongly disagree strongly agree

*(Place a mark on the scale above)*

There are places for me to participate in muscle strengthening activity 2 days weekly

strongly disagree strongly agree

*(Place a mark on the scale above)*

I don't know how to count calories in order to monitor my intake.

strongly disagree strongly agree

*(Place a mark on the scale above)*

I don't know how to count fat grams in order to monitor my intake.

strongly disagree strongly agree

*(Place a mark on the scale above)*

I don't have a way to track my diet and physical activity.

strongly disagree strongly agree

*(Place a mark on the scale above)*

**END OF SECTION SIX and Questionnaire on Weight Management Behaviors.**

**Following this section, you will be asked to enter your email address for the gift card drawing. Once you enter your email address you will be taken to an eight question survey about the Questionnaire on Weight Management Behaviors and acceptability of the questionnaire.**

Please enter your email address. Your email address will be used to track test-retest results and for the gift card drawing.

_____

# Acceptability Of Survey

Please complete the following 8 questions about the acceptability of the Questionnaire on Weight Management Behaviors.

---

**ACCEPTABILITY OF SURVEY**

**The following eight questions ask your opinion about the acceptability of the Questionnaire on Weight Management Behaviors. Your answers are important in the further development and use of the questionnaire.**

**Thank you for your time and consideration.**

I think this research is important for the health of African-American women.

◯ Yes
◯ No
◯ I don't know

I think the survey asked questions that are important for helping African-American women who want to improve their health by improving weight management behaviors.

◯ Yes
◯ No
◯ I don't know

The survey was easy to take.

◯ Yes
◯ No

Approximately how long did it take you to complete the survey (please enter response in minutes)?

_____

The survey took too long to take.

◯ Yes
◯ No

In my opinion there were:

◯ Too many questions
◯ Just enough questions
◯ Not enough questions

I feel some of the questions were insensitive or offensive.

◯ Yes
◯ No

Please provide any other information you think is important about your experience with the survey or the survey itself. Any opinions you have are important.

_____